

COAL AGE

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The Honor of the Coal Industry

REPUTATION is what we seem to be; character is what we really are. The test of the character and honor of the coal industry is now taking place.

The Nation needs coal so badly that it does not complain loudly at the present time, even when it is fed with fuel that contains an undue percentage of slate.

Are producers of coal taking advantage of the people's emergency? Most of them are not, but a few unscrupulous individuals and companies have shipped carloads of dirty coal; and their action threatens the good name of the industry.

THERE is always a day of reckoning. When the time comes that coal is not so scarce and therefore not so vital to the Nation's life, will it not be worth something if coal owners and coal miners can stand at the bar of public opinion and hear the words "Well Done"?

In the rush of getting it to market coal is being handled more roughly than ever before; and it must of necessity follow that there will be more fine coal and fewer lumps in what the average consumer gets. The public must be informed of this fact. However, there is no excuse for the miner to load slate, nor for the operator to ship it.

THE weak spot in our national crisis is railroad locomotives. We lack several thousand badly needed engines. We also lack men to repair the locomotives we now have. Every pound of freight must do its part. Every ounce of rock or slate that is hauled on our railroads today will have as its measure of cost just so many drops of the lifeblood of American boys fighting for us in France next summer.

Every other aim must be subordinate to our present business of winning the war. Each one of us must have his war program and a clear-cut sense of personal duty. The miner at the face who knowingly shovels slate into his car, or the operator who permits him to do it, is just as much a traitor as the man who sells Germany the details of a war secret, and is just as much an enemy as the Teuton who sticks a bayonet into one of Uncle Sam's soldiers.

THE boys at the front have faith in us. If any of them die, let it be by German bullets and not through our carelessness and inefficiency here at home. Mining coal today carries with it a responsibility greater than that of any other industry.

IDEAS AND SUGGESTIONS

Promotion

BY ROBERT LITTLEHALES
Smithton, Pennsylvania

How often the remark is heard: "Why, he is active enough and means well, but he doesn't seem to know anything." Some men are all "fuss and feathers." Mere fussiness cuts no figure. You can be here and there and still be nowhere. Other men are all "slam bang." If they drive a nail, they must dent the board. They lift a one-pound weight with five-pound effort.

Direct your effort by every ounce of intelligence you possess. Say what you mean, but say it as it ought to be said. "What do they say of me in the departments through which you have passed?" asked Napoleon. "Sire," replied M. de Narbonne, "some say you are a god, others say you are a devil; but all are agreed that you are more than a man." That was diplomatic. Napoleon knew that he was called a god and a devil, but "more than a man" smothered impossibility and drew the sting.

Don't cry about your lack of opportunity. Make it! Don't try to be a martyr! Don't assume the role of suffering innocence! Don't nurse your nerves! Don't coddle your whims! Don't "baby" your sins! **BE A MAN.**

Unless you fill the place you now occupy, you cannot expect to fill a more important one. Life, be it physical or mental or financial, should be a series of moultings. The lobster casts its shell because its soft body has become too large for the house. You can never get a better position than the one you have now unless you grow too large for the latter. Or, if you secure that better position, you can only keep it because you have somehow grown to that size.

Priming Centrifugal Pumps

One of the difficulties met with in the operation of a centrifugal pump is the priming, and for this reason a number of operators are using the plunger rather than the centrifugal type of pump. Various methods of priming have been tried, some of which were successful and others not. The Clearfield Bituminous Coal Corporation at its Rossiter mine, Rossiter, Indiana County, Pennsylvania, has succeeded in devising a priming device that has operated very successfully.

In the pumping room at the foot of the main slope (it is also at the foot of a manshaft) the company has three 600-gal. single-stage Morris centrifugal

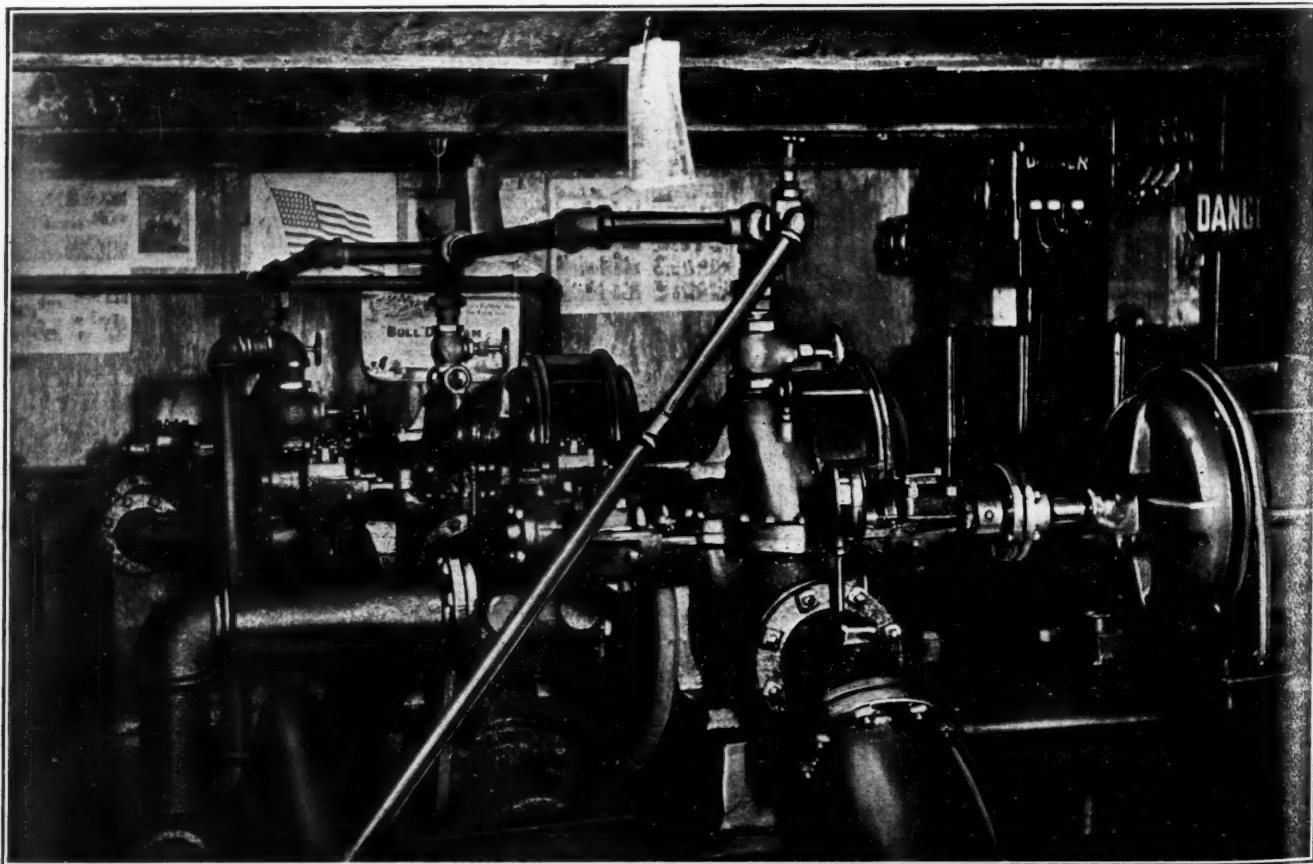


FIG. 1. PUMPROOM OF CLEARFIELD BITUMINOUS COAL CORPORATION, ROSSITER, PENN.

pumps arranged in a battery. These pumps have separate suction lines, but they all discharge into a main discharge line that goes up the manshaft to the surface, making a head of 80 ft. for the pumps to work against. The pumps have a maximum lift of 9.23 ft. on the suction line. The pumproom itself, as can easily be seen in Fig. 1, is built entirely of concrete.

The Clearfield company has had considerable trouble in operating these pumps. It has been difficult to prime them, as they would not start until there was 7 lb. pressure in the discharge line. First the plan was tried of keeping the water in the pumps from running back to the sump by means of foot valves, but these valves would stick and leak, and they caused a great deal of annoyance.

Next priming was tried by means of an auxiliary pump, an electric-driven plunger pump built by Deming.

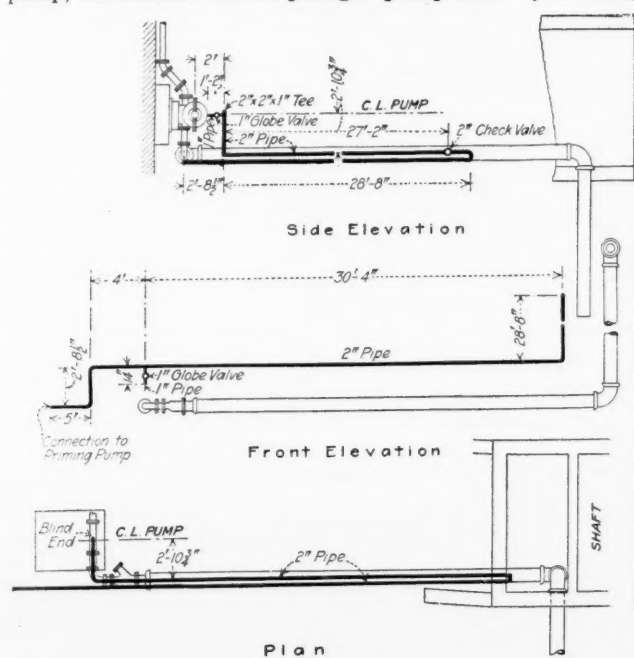


FIG. 2. HOW PIPES WERE CONNECTED

The water was pumped into the centrifugal pump through the priming hole. Foot valves were placed on the suction pipes, and the plunger pump was run until the water filled the suction pipe and the pump, and rose 14 ft. in the discharge pipe. Then the centrifugal pump was started. This method was found to be too slow, particularly if there were bad leaks in the foot valves, though it is still used in case of emergency.

It was then decided that if a vacuum could be produced in the pump the water would rise from the sump into the suction pipe and then into the pump. This method was found to be successful and much quicker than the methods first tried. Further, it eliminates all trouble due to leaking foot valves.

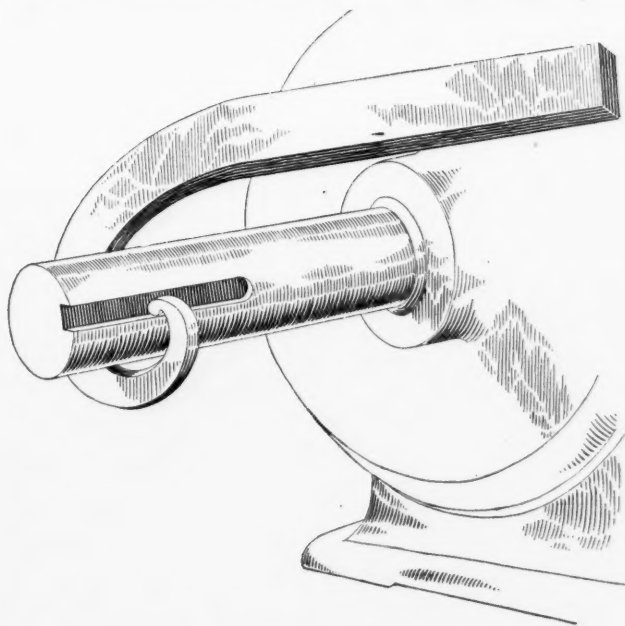
A 2-in. pipe was connected by branch lines to each of the priming inlets of the pumps, as illustrated in Fig. 2. These branch lines each consist of a 1-in. nipple, a 1-in. globe valve and another 1-in. nipple. The main 2-in. pipe was run to the main shaft, 30 ft. away, and then up a distance of 28 ft. 8 in. This, together with the difference in elevation between the center of the pump and the 2-in. pipe line, makes a total distance of 31 ft. 4½ in., or higher than water will rise in a vacuum. A check valve was placed near the top of the

line, and at the top of this pipe a 2-in. return elbow was located, then a 2-in. pipe was run down again to the pumproom, to which was connected a blower operated by a 2-hp. motor.

When it is desired to prime the pumps, the main discharge line valve is closed and the blower started. This sucks the air from the 2-in. pipe, the pump and the suction line, causing the water to rise in the suction pipe, the pump and the 2-in. pipe line. As soon as the water reaches a height of 14 ft., as indicated on a pressure gage at the bottom of the discharge line, the large centrifugal pump is started, the large valve in the discharge pipe opened and the water discharged through this to the surface.

Spanner Wrench for Rotating Shafts During Erection or Repair

The illustration below shows a spanner wrench for shafts that has proved so useful that others should know of it. The wrench is made of 1 x 1/2-in. steel, and can be used on shafts from 1 to 6 in. in diameter without damaging the keyway. The shape of the tool is the result of something like two years' evolution. It is christened the "Twister" and is used for rotating (by



SPANNER WRENCH FOR FINISHED SHAFTS

hand) armatures and the like during the process of erection, repair and inspection, and of course it works equally well on other similar things. The need of something of the kind is shown by the condition in which keyways on shafts are so frequently found, these being damaged by the use of monkey wrenches and pipe wrenches.—*Power.*

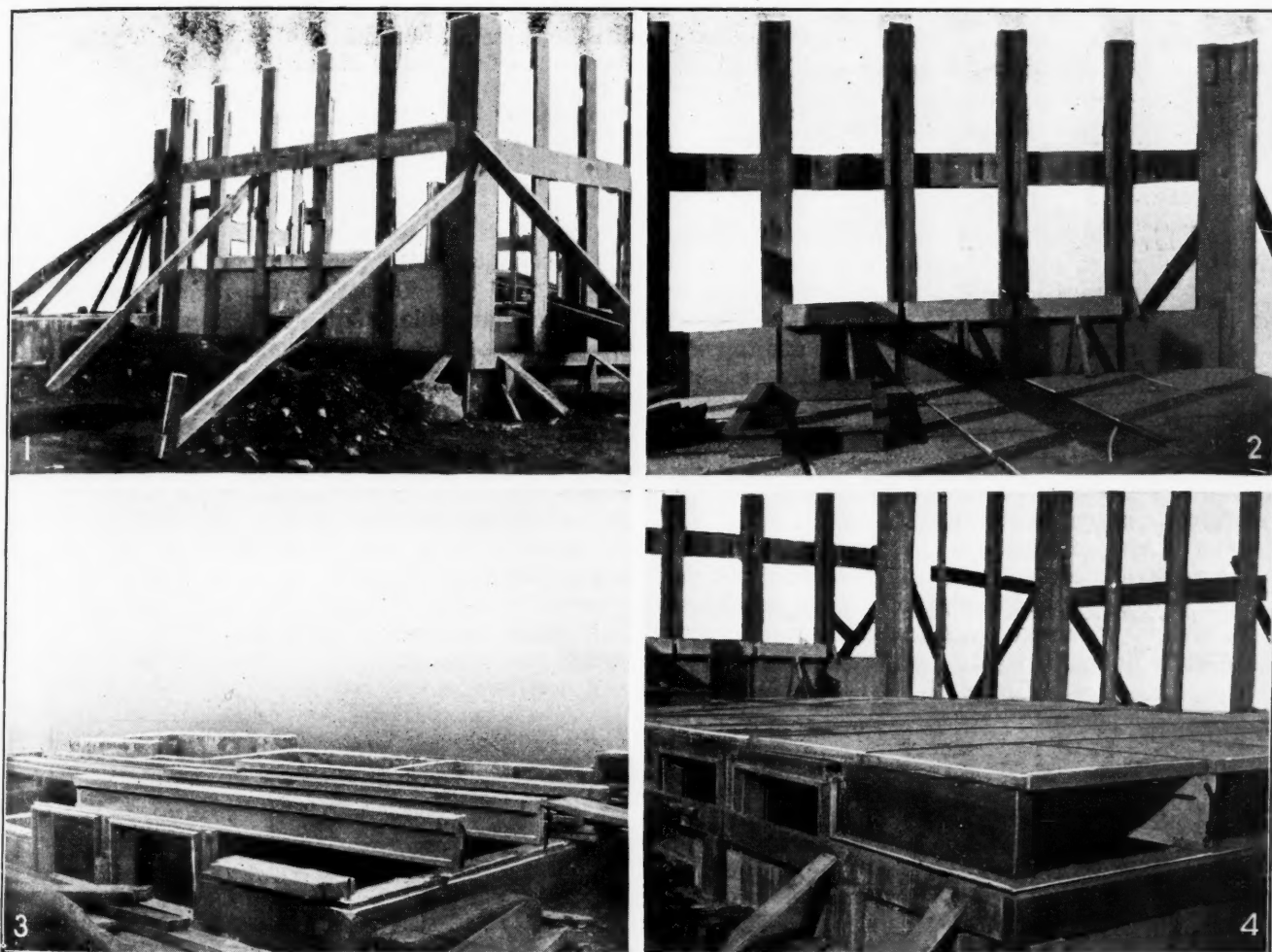
IN THE OPENING OF A NEW MINE, the fixing of the daily capacity is of great importance, for on this depend the number of houses to be built and the number of mining machines and locomotives required. The capacity of the power plant and numerous other items depend on the greatest output to be handled in one day and not on the average output.

pieces correctly. When all stud forms and sections are in place up to the underside of the roof rafters and the reinforcing steel rods have been placed in the studs, concrete is poured into these pockets, which extend all the way to the roof. As they become filled, the concrete settles around the ends of the sections projecting into the pockets and firmly embeds and secures them.

To overcome the dampness and sweating of concrete walls as usually built, and at the same time to add warmth to dryness, the Simpson Craft method provides on the inside face of the wall studs small wire "hair pins," spaced 6 in. on centers which are built in when the studs are cast. Over the ends of these are forced

the outside face of the slabs at these points during casting. Large air spaces are provided between the studs and, as the paper is placed against the inner face of the studs and the rib of the lath is nearly an inch in depth, another air space of that width is provided between the plaster and the paper. This air space extends entirely around the building, cutting off the exterior from the interior face of the wall, effectively damp-proofing, frost-proofing, sound-proofing and insulating the walls.

When the concrete is mixed 5 per cent. of hydrated lime is added to the cement. This not only helps to make the concrete flow more smoothly, but permits a



ILLUSTRATING DIFFERENT STAGES IN THE HOUSING DEVELOPMENT OF THE LEHIGH COAL AND NAVIGATION CO. AT LANSFORD, PENN.

Ninety per cent. of structure is cast in standard molds, in a casting shop located on the site

sheets of heavy waterproof felt, lapped well at all joints and tightly secured to the edges of all door and window frames. When the paper is in place, a metal lath with heavy outstanding ribs is forced over the ends of the hair pins and a small wire threaded through the loop, after which the loops are tightly twisted, securely locking both paper and lath to the studs. The walls are then plastered three coats in the usual manner.

The slabs for the exterior walls are only 1 in. in thickness except when used in those types of houses calling for plain surfaces, in which case $\frac{1}{2}$ in. of stucco is added on the outside, after the work is erected. Provision is made for securing the stucco by roughening

finer surface treatment and at the same time waterproofs the concrete. The only finishing required for the exterior walls is the touching up of the projecting studs around the panels, except, of course, the lower portion of some of the buildings where they are stuccoed. The outside of all walls, when dry, is gone over with two coats of Cabot's cement stain in selected color and a pleasing and permanent surface obtained. The stairs, which are also of concrete, are precast with the treads and risers in one piece. A box string of concrete is cast after the treads and railing are set up, and surrounds the ends of the treads and provides a base upon which the plaster of the wall finishes. The



HOUSE OF "SIMPSON CRAFT" CONSTRUCTION

stair railing and newels are also of reinforced concrete, precast and set in place when the stairs are erected.

The chimneys are likewise built of precast sections and have specially designed smoke-proof expansion joints to allow for changes in temperature and to guard against the leakage of gas. The finished floors and base are of cement, with sanitary cove.

The partition studs on the first floor are precast concrete, covered with metal lath, and on the second floor are of wood covered with wire mesh backed with heavy waterproof plaster applied direct thereto. The roof framing is also of wood.

The roofs are covered with asphalt shingles, green and red in color, applied to wood sheathing. All houses are heated by steam and have sanitary open plumbing and electric lights. Simpson Craft construction is the

invention of John T. Simpson, C. E., Newark, New Jersey.

Each house provides a reception hall, large living room, dining room, kitchen, pantry, front, side and rear porches on the first floor; three bedrooms, bathroom, three large bedroom closets and a linen closet on the second floor. There is a full cellar under the entire house, subdivided into three separate rooms by 6-in. solid concrete walls.

The houses were designed by Simpson & Briscoe, Inc., architects and engineers, of Newark, N. J., and are being built by the Shamokin Lumber and Manufacturing Co., of Shamokin, Penn., under the immediate charge of J. B. Warriner, chief engineer of the Lehigh Coal and Navigation Co. The total cost, for the ten dwellings, complete, exclusive of ground, will be \$35,000.

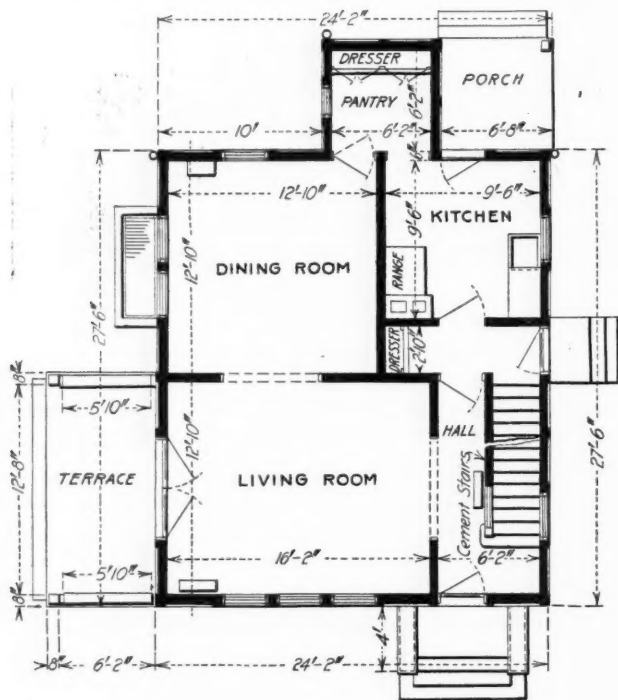
How a Forty-Ton Drum Was Moved Up a Mountain

BY RALPH W. MAYER

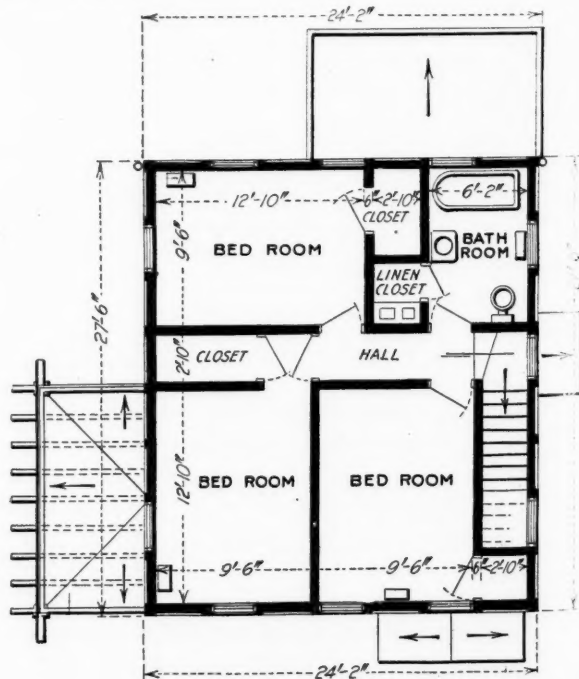
Roslyn, Wash.

The Northwestern Improvement Co. had two drums weighing 16 and 40 tons each to move about a mile up a mountain side to its newly developed Mine No. 8. A double-track incline extends from the tippie to the mouth of the mine, at the entrance to which the hoisting engines and drums were to be installed. A wagon road also led to the mouth of the mine, but it was not suited to the hauling of heavy machinery.

The two tracks on the incline were spaced equally distant throughout their entire length. Every fifth tie extended under the full width of both tracks and was spiked to all four rails. Where it was not advisable to use ties of this length, short single-track ties were laid under the inner rails of each track, these being spiked fast to the rails. In this manner the two tracks



FIRST FLOOR PLAN



SECOND FLOOR PLAN

FLOOR PLANS OF FIREPROOF DWELLINGS NOW IN COURSE OF ERECTION AT LANSFORD, PENN.

were held a uniform distance apart for their entire length and were prevented from spreading.

The engines and smaller fittings were hoisted up the incline first, a small electric hoist, which had been used on development work at the mine, furnishing the power. The smaller of the two drums was then taken up. It was moved to the foot of the incline on two trucks specially built to transport heavy machinery. The wheels of these trucks were of the same diameter, and extra strong. The two axles of the rear truck were fastened rigidly together in a manner somewhat similar to that employed in trucks used under railroad cars. Pieces of 10 x 10-in. timber were mortised and placed on top of the axles, forming a platform between them. These timbers were fastened to the axles with U-shaped irons, or clevises, bolted around the timbers and axle. The axles were placed just far enough apart so that the wheels would not interfere with each other. A space of 10 in. between the front and rear wheels of each of the trucks is sufficient.

CONSTRUCTION DETAILS OF THE TRUCK PLATFORM

A 12 x 12-in. timber is bolted fast to this platform between and parallel with the axles, for a bolster to carry the weight of the load. The wheels being low the load is thus carried above them, and out over them if necessary. Two iron bars connect the front and rear axles. These are placed near the wheels and underneath the axles, being fastened to the latter by iron clamps. Thus no holes are drilled in the axle, and it is not weakened. The front truck also consists of four wheels and two axles rigidly fastened together. The platform on the axles is made by placing two 10 x 10-in. timbers from axle to axle and next to the wheels. These two side timbers are allowed to extend beyond the front axle for about 2 ft., and holes are bored in them near their ends through which a rod is passed to hold the tongue of the truck. The middle timber of the platform is made shorter, so that it only reaches a few inches in front of the axle. The tongue is made of the same-sized timber and placed in line with this middle stick, 6 in. separating their two ends.

Two timbers of the same size are placed alongside this middle stick and the tongue, and securely bolted to the latter. These sticks, or hounds, have holes bored through their free ends, and an iron rod passed through these holes and similar holes in the two side timbers of the platform, allowing the tongue to move up and down. These two side timbers, or hounds, only extend back from the tongue to the front axle.

A small wheel on a swivel or an iron shoe is placed on the end of the tongue to prevent it from digging into the ground. A timber is bolted crosswise to the three platform pieces between the front and rear wheels. Iron braces are used to fasten it securely to the platform timbers.

On top of this cross timber a bolster is placed. This cross timber is mortised into the platform so that the front and rear bolsters are the same height. The timber and bolster are reinforced with flat plates of $\frac{1}{2}$ -in. iron, and a $\frac{1}{2}$ -in. iron strap passes from the platform up over the bolster, both of its ends being fastened securely to the platform. A kingpin passes through a hole in the iron strap on top of the bolster and down through the bolster and platform. The bolster

being thus fastened in the middle, its ends are free to move back and forth. The rear axle of the front truck and the front axle of the rear truck are connected together by means of two chains fastened X-fashion, the one chain being attached to the right side of the front axle and to the left side of the rear axle, and the other chain *vice versa*.

The load is pulled by a chain fastened to the front axle of the front truck. The end of the tongue is attached to the chain so as to guide the truck. The load is moved by a donkey engine on skids, which can be moved along by the engine or by a team of horses with block and tackle.

A 1-in. cable was stretched out for a quarter of a mile or so and its end made fast to a deadman. The block was then made fast to the cable at each shift of the tackle. The piece of machinery was loaded on the trucks by jacking it up with the help of blocking, running the trucks underneath, then lowering it onto them. It was unloaded the same way.

The drum was moved to the foot of the tramway by this means and then placed upon four specially prepared trucks provided with roller-bearing mine-car wheels. The two axles of each truck were set as close together as the wheels would allow and fastened to two pieces of 10 x 10-in. timber placed side by side and parallel with the track. Each end of the timbers extended over the axle about 1 ft. The truck was stiffened by X-braces between the two timbers. A piece of 6 x 12-in. timber placed across each truck in the middle and fastened to the side frame carried the load.

Two of these trucks were used on each track. Pieces of 12 x 12-in. timber were laid from the front to the rear truck on each track, and cross timbers of the same size were placed thereon. The weight laid upon these cross timbers was thus distributed over the two tracks by the four trucks, two on each track, while the drum was carried between the tracks. The small drum was hoisted and set in place before the larger one. The boilers were not in place when the 40-ton drum was ready to be hoisted, but as compressed air was used in the mine and the engine driving the small drum was in position, it was connected to the air line and compressed air used to hoist the drum up the incline.

The drum was moved to the foot of the incline by placing it on 12 x 12-in. timbers chamfered at the ends and used as skids. Timbers of the same size were laid upon the ground and 2-in. iron rollers placed between them and the skids. A donkey engine was used to pull the drum. This engine was also used for dragging forward the timbers upon which the rollers were placed.

When hoisting the drums up the incline, three dogs, or drags, were used to prevent the load from running away should anything break. These were made from 12 x 12-in. timbers 16 ft. long. A piece of timber of this size was securely bolted across the rear end of the drum and directly underneath the drum shaft. A piece of 1-in. cable was passed around this timber and through a hole bored in the end of the drag timber, the two ends of the cable being fastened together by means of clamps, or clips. Several bolts were put through the drag timber on each side of the hole to strengthen it and prevent splitting. One of these dogs dragged on the ground between the two tracks, the other two dragging over the ties.

An Up-to-Date Power Plant – II

By DEVER C. ASHMEAD

Tarrytown, N. Y.

THE dam and the reservoir at the Clymer power plant are of particular interest, as they are good examples of a simple, permanent dam and reservoir, and could be used in a number of cases as a standard. The reservoir has a capacity of 8,000,000 gal. and covers an area of $2\frac{3}{4}$ acres. Its maximum length is about 800 ft. and the width at the widest point, which is at the dam, is about 320 ft. The maximum depth is 24.5 ft. The drainage area of the water shed which sup-

plies the reservoir is 160 acres. The rock is shale and the surface soil is clay (see Fig. 11). The surface soil was removed to a depth of 5 ft. for the core wall. The first 10 ft. of the core wall is 2 ft. 6 in. thick. The next 9 ft. is 2 ft. thick and the third and upper part is 10 ft. high and 18 in. thick, making a total height of 29 ft., thus putting the top of the core wall at an elevation of 1344 feet.

The surface soil was excavated to a depth of 2 ft. in order to remove all decaying vegetable matter and for-

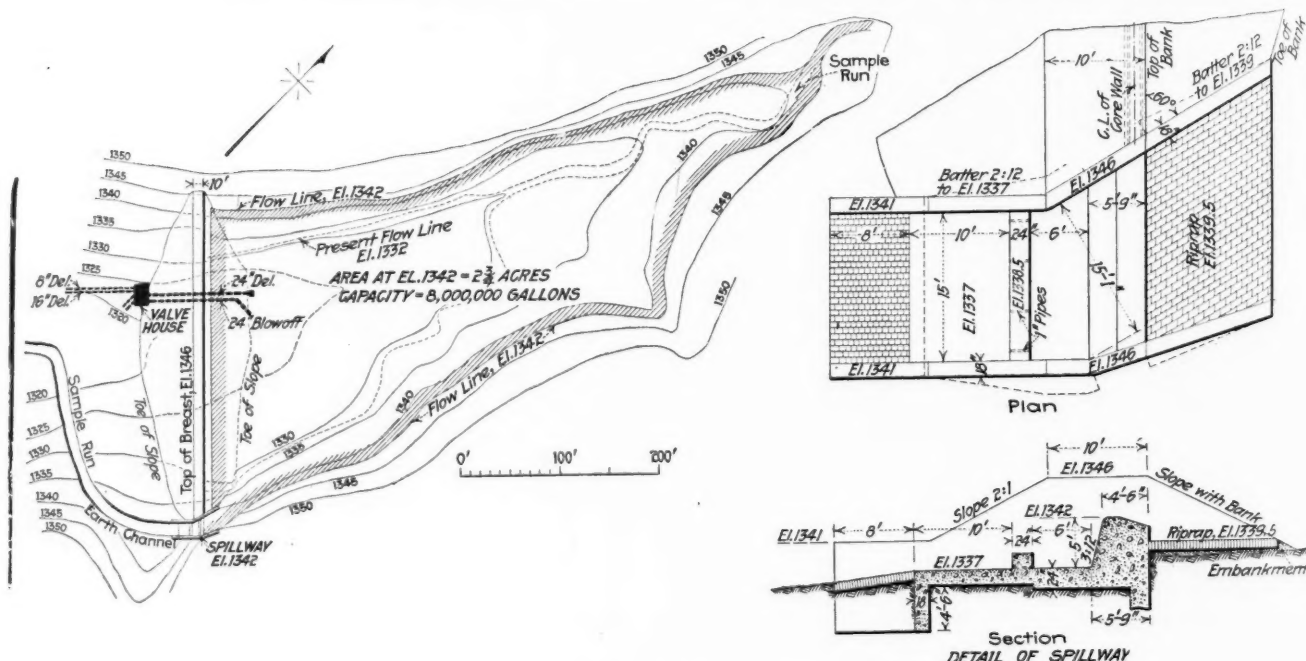


FIG. 9. PLAN OF RESERVOIR AND DETAILS OF SPILLWAY

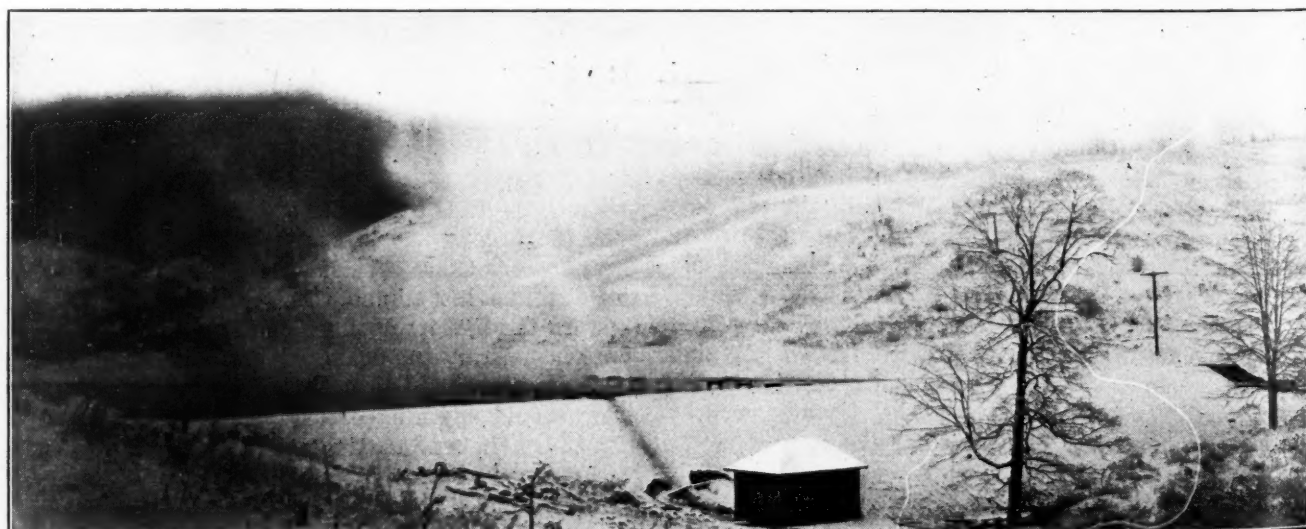


FIG. 10. VIEW OF DAM AND RESERVOIR, GATEHOUSE IN FOREGROUND

plies the reservoir is 160 acres. Fig. 9 shows the size of the reservoir and Fig. 10 is a view of the dam and reservoir.

The dam is constructed of earth with a concrete core wall. The depth, through the surface soil to bed rock,

is about 10 ft. The rock is shale and the surface soil is clay (see Fig. 11). The surface soil was removed to a depth of 5 ft. for the core wall. This part of the dam was made of clay carefully rolled and tamped so that it formed a solid earth bank. The top of the earthen part of the dam is at a height of 1346 ft., or 2 ft. higher than the

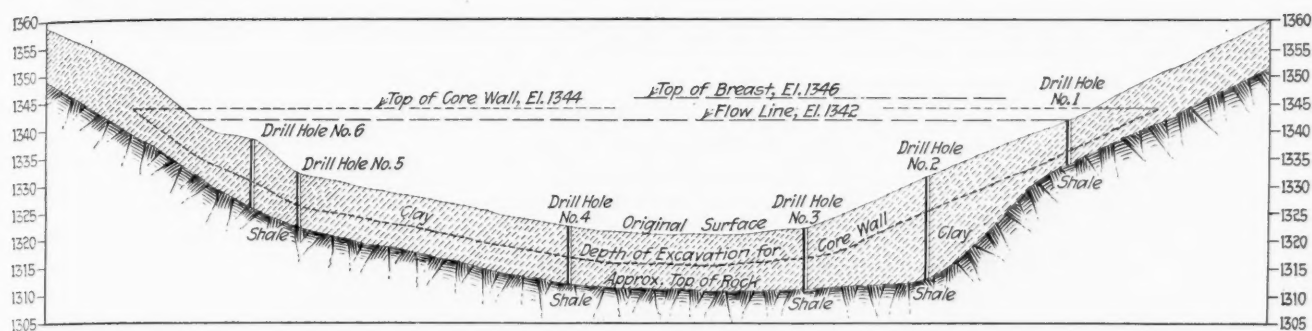


FIG. 11. SHOWING CHARACTER OF SOIL ENCOUNTERED IN SINKING FOUNDATIONS

top of the core wall. The top of the dam is 10 ft. across, and the center line of the core wall is set 4 ft. from the center line of the main dam on the upstream side.

The upper side of the dam has a slope of 2 to 1 and is covered with riprap, 1 ft. in thickness. The downstream side of the dam has a slope of 2 to 1 and is sodded. On the left-hand side of the dam, looking downstream, is the spillway, the top of which is at an elevation of 1342 ft., or 4 ft. below the top of the main dam and 2 ft. below the top of the core wall. The spillway, with the exception of the bottom of the approach and the discharge, is built entirely of concrete (see Fig. 9 for details). The upper approach to the spillway is riprap with concrete sidewalls corresponding to the shape of the main dam. These concrete walls are 18 in. thick. The water flows over the main part of the spillway and falls a distance of 5 ft. The opening through which the water passes over the top of the spillway is 15 ft. wide and 4 ft. high. The lower end of the spillway is made of riprap laid in mortar. The water, after

it leaves the spillway, flows through an earthen channel until it joins the original creek.

Two pipe lines pass through the dam to the valve-house, as is shown in Fig. 12, both these pipes being 24 in. in diameter. One is a delivery pipe and the other a blowoff pipe. Where they pass through the embankment, the pipes are laid in concrete cradles 6 in. thick. Two cutoffs on each pipe prevent leakage through the dam along the outside of the pipes. These cutoffs are made of $\frac{1}{2}$ -in. thick reinforced wrought-iron disks, the outside diameter of which is 6 ft. The disks are set in concrete 18 in. thick.

In Fig. 12 the end of the discharge is shown resting in concrete. To this discharge pipe is attached a large metal strainer to protect it from taking in foreign substances. The blowoff pipe rests in riprap and is not protected.

Through a 16-in. cast-iron pipe the circulating water for the condensers is pumped back to the reservoir, to a spray system of cooling, by two 10-in. two-impeller turbo-volute pumps driven by Alberger-Curtis noncon-

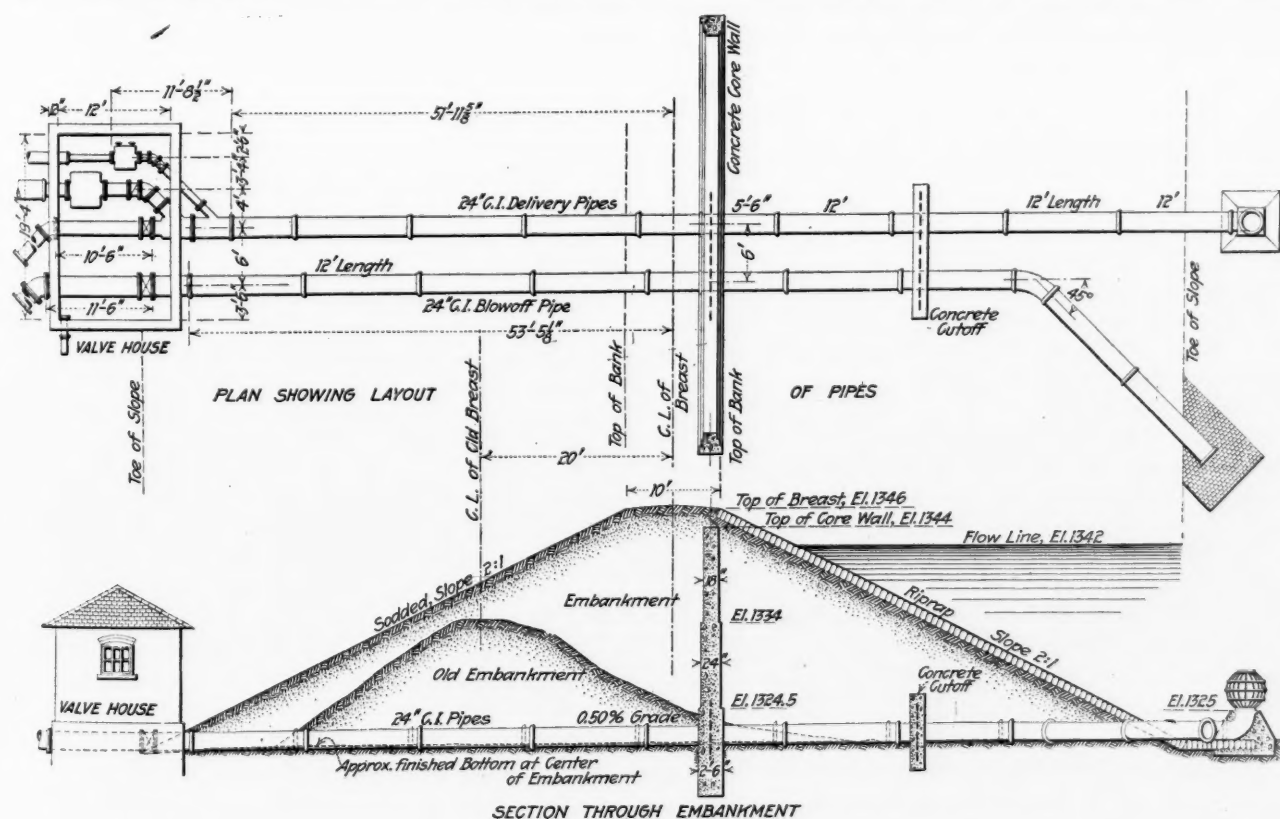


FIG. 12. CROSS-SECTION OF DAM AND ARRANGEMENT OF BLOWOFF AND DISCHARGE PIPES

densing steam turbines. Twenty-two standpipes and four branches to each pipe cool the water for the power house. The spray system was furnished by the Spray Engineering Company.

OUTSIDE EQUIPMENT OF POWER HOUSE

The transformers are mounted outside of the power house and consist of three General Electric H-60-500-kw., 6600/2300-volt, single-phase, oil-cooled transformers and three General Electric H-60-300-kw., 22,000/2300-volt, single-phase, oil-cooled transformers, together with the necessary choke coils, disconnecting switches and aluminum cell lightning-arrester equipment.

The three 500-kw. transformers will be employed to step up the generated voltage from 2300 to 6600 for use on the transmission line from the main station to the Sample Run slope substation at Onberg and the Barr slope substation at Hastie Run and Dixonville.

The three 300-kw. transformers are employed to step up the generated voltage from 2300 to 22,000 for use

on the transmission line running from the power house to the West Branch mine substations near Barnesboro.

Four substations are supplied by the mine—one at Sample Run, one at Hastie Run, one at Dixonville and one at West Branch. The equipment of the Sample Run substation consists of two General Electric TC-60-300-kw., 1200-r.p.m., 550-volt, compound-wound, rotary converters with two banks of HJ-60-125-kv.-a., 6600/340-volt, indoor-type, oil-cooled transformers for use with the above rotary converter, together with the necessary choke coils, disconnecting switches, switchboard and aluminum cell lightning-arrester equipment. All the apparatus is housed in a substantial brick building 37 ft. 8 in. by 22 ft. 5 in. in size.

There is also mounted outside of this substation three General Electric H-60-100-kv.-a., 6600/440-volt, 60-cycle, single-phase, oil-cooled, step-down transformers. This apparatus is for use with the mine ventilating fan and to run the mine pumps in the central pumping station. The Hastie Run and Dixonville substations contain

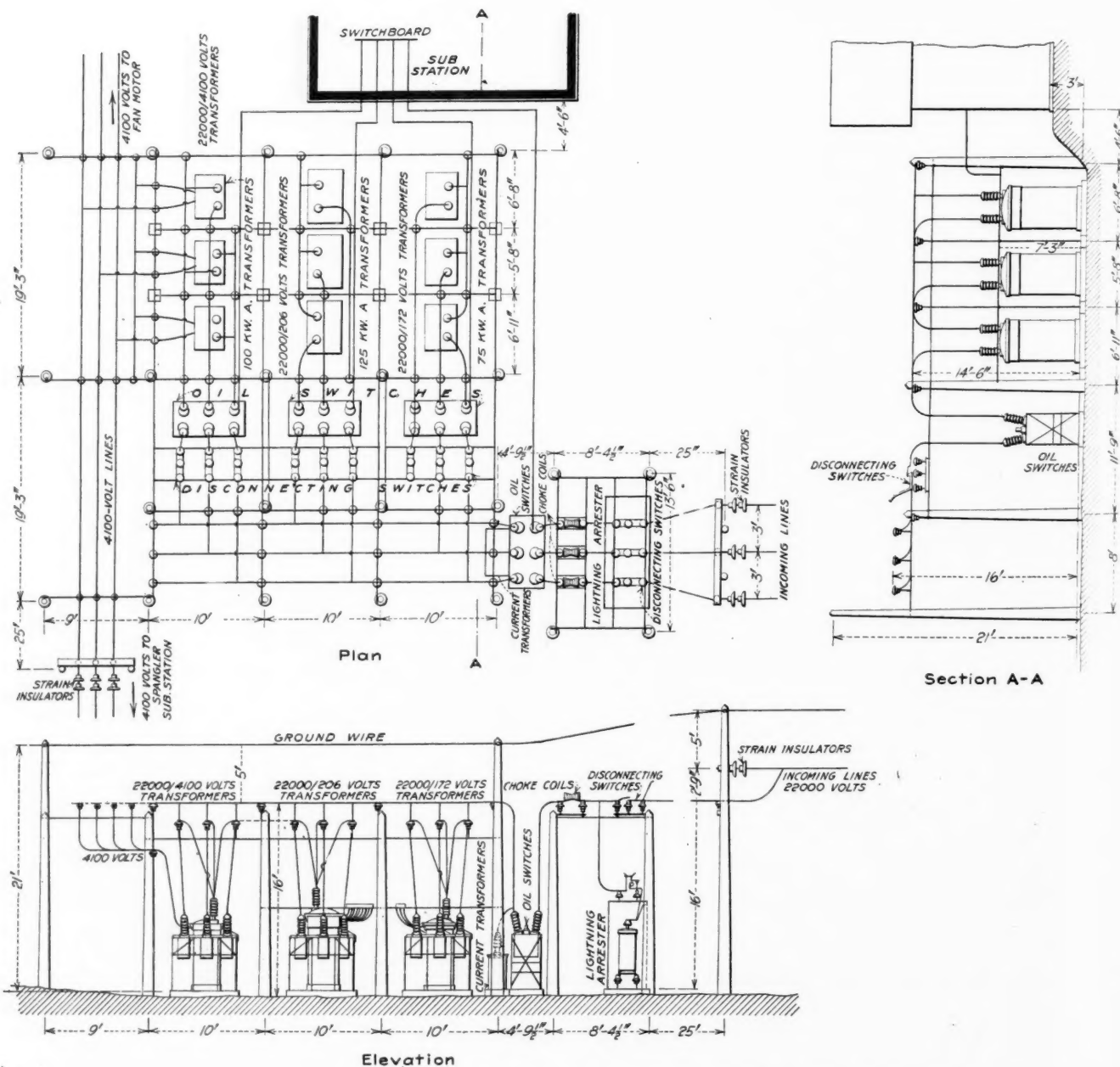


FIG. 13. DETAILS OF TRANSFORMER STATION AT THE WEST BRANCH SUBSTATION

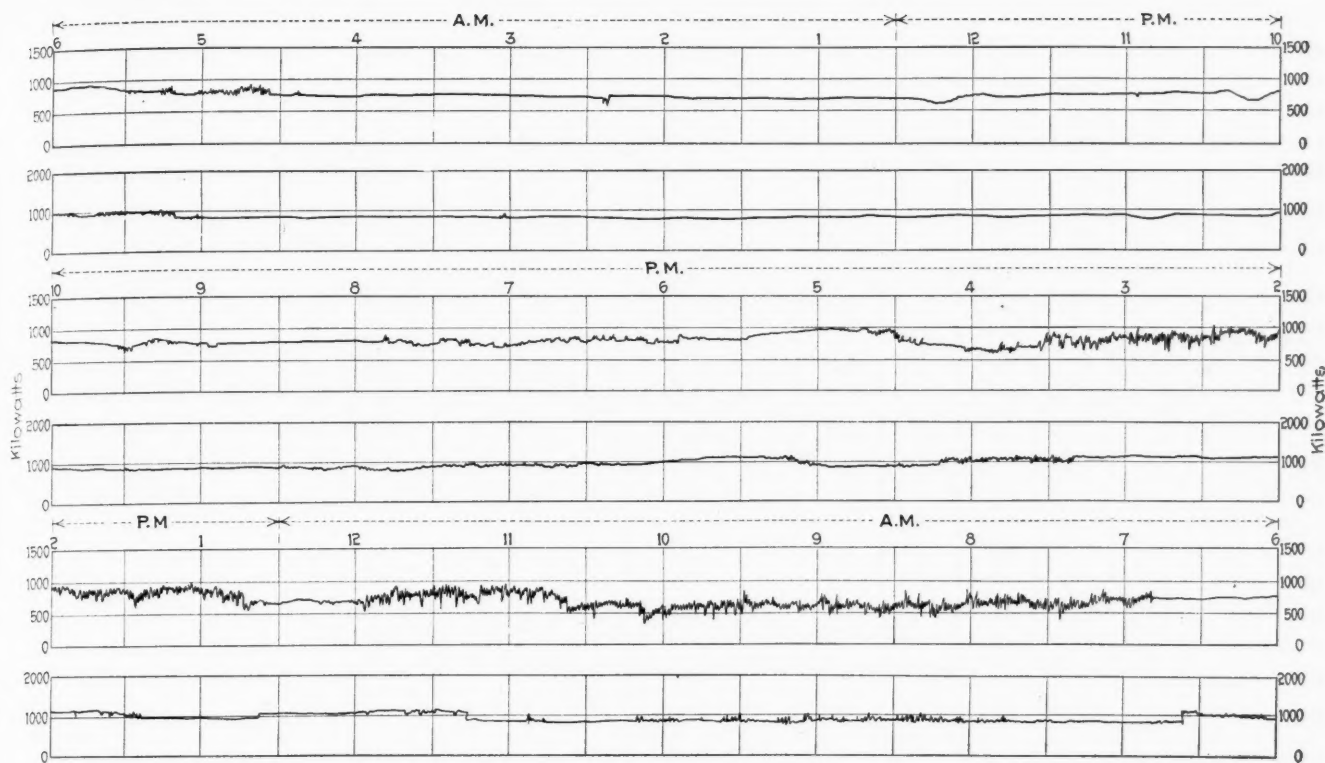


FIG. 14. CHART SHOWING LOAD ON POWER HOUSE

the same equipment, consisting of one General Electric TC-6-300-kw., 1200-r.p.m., 500-volt, compound-wound rotary converter with one bank of HJ-60-125-kv.-a., 6600/340-volt, indoor-type, oil-cooled transformers for use with this rotary converter, together with the necessary choke coils, disconnecting switches, switchboard and aluminum cell lightning-arrester equipment. The apparatus is housed in a brick building 27 ft. 8 in. long by 22 ft. 5 in. wide.

The substation equipment at the West Branch substation is exceedingly interesting, particularly the transformer station outside the building. In the substation proper, which is a concrete building, there is one General Electric TC-6-200-kw., 1200-r.p.m., 275-volt, compound-wound rotary converter, together with a switchboard and one HCC-6-300-kw., 1200-r.p.m., 275-volt, compound-wound rotary converter and its switchboard.

The transformer station is outside the substation, and for convenience, neatness and accessibility there is nothing left to be desired. The 22,000-volt current from the power plant comes in as shown in Fig. 13, and passes through a set of disconnecting switches. Just beyond these is the lightning arrester. The current then passes through the choke coils. From these coils it goes to an oil switch, which is operated by a pipe mechanism from a transformer switchboard in the substation building.

The 22,000-volt lines are carried along for an additional distance of 30 ft. This space is divided into three panels of 10 ft. each. In the first panel the line is tapped in parallel and the 22,000-volt current passes through a set of disconnecting switches and another oil switch operated from the transformer switchboard in the substation. Then the current passes through a bank of three General Electric HJ-60-75-kv.-a., 22,000/172-volt, 60-cycle, oil-cooled transformers to be used in connection with the 200-kw. rotary converter.

In the second section, or panel, the same arrangement

of switches exists, but instead of the above transformers there is a bank of three General Electric HJ-60-125-kv.-a., 22,000/206-volt, 60-cycle, oil-cooled transformers used in connection with the 300-kw. rotary converter.

In order to take care of the equipment which was operated on a 4100-volt circuit from the old West Branch power house, and to save changing this equipment, a third set of transformers is placed in the third section, or panel. This panel has the same switch equipment and a bank of three General Electric H-60-100-kv.-a., 22,000/4100-volt, 60-cycle, single-phase, oil-cooled transformers. These transformers step down the incoming line voltage from 22,000 to 4100.

This 4100-volt current is used to operate the mine ventilating fan as well as a small substation at Spangler, which consists of a General Electric TCC-6-100-kw., 1200-r.p.m., 275-volt, compound-wound rotary converter together with the necessary transformers and switching apparatus.

The equipment at the West Branch substation is controlled on the 22,000-volt side by 22,000-volt oil switches of the outdoor type and mounted directly in back of the transformers (see Fig. 13). These oil switches, as well as the transformers, are protected by disconnecting switches, choke coils and aluminum cell lightning-arrester equipment.

The supports for holding the insulators for the transmission lines in the transformer station consist of wooden poles for uprights and 1½-in. galvanized pipe for the crosspieces. These pipes are shown by the solid lines in Fig. 13. This figure also shows the general layout of the transformer station.

The arrangement of the equipment is such that it is absolutely unnecessary for a man to come near the high-tension current in order to throw a switch. The only time he would be required to approach the high-tension lines would be in the case of a breakdown.

At the present time there is a connected load on the power house through its various substations of 2000 kw., which could easily be handled with the present equipment. But this is not all the load that it has to carry, as it is furnishing from 500 to 1000 kw. to the Pennsylvania Public Service Corporation. In Fig. 14 is found the chart giving the output of the power plant. This is shown in the second, fourth and sixth lines. The first, third and fifth lines show the amount of current furnished the Public Service Corporation. The chart gives one full day's operation of the power plant and was taken on Dec. 6, 1917, commencing at 6 a.m. and running to 6 a.m. Dec. 7, 1917.

A study of these charts shows that the maximum power consumption of the coal company was at noon, when its current was being consumed at the rate of 400 kw.-hr., and for a few periods during the day, when as much as 600 kw.-hr. was consumed; but this did not last over two or three minutes at a time.

The power furnished the service corporation holds steady at about 700-kw.-hr. from 6 a.m. until 9:30 a.m., when it drops gradually to 600 kw.-hr., increasing then to 11 a.m., when it is drawing 900 kw.-hr. During the noon hour, as is to be expected, there is a marked falling off. This is likewise reflected on the chart showing the total output.

The consumption of the service company increases at 12:30 p.m. and holds steady until 3:30 p.m., when the mines on its lines begin to stop work and before the night load begins to come on. At 4:30 p.m. this load comes on, and from then to 5:30 holds at almost 1000 kw.-hr., when it drops to 800 kw.-hr. and keeps at this rate with hardly any breaks until the next morning.

During November, 1917, the power furnished the Pennsylvania Public Service Corporation amounted to 319,500 kw.-hr., whereas the coal company at two of its mines consumed only 86,900 kw.-hr. In November 603 tons of coal was burned to produce the 406,400 kw.-hr., requiring a little less than 3 lb. of coal for each kilowatt-hour produced. This is very good considering the fact that it was the first full month the power house had been operated and that all the firemen were green and unfamiliar with the mechanical stokers.

The average load on the power house is about 900 kw., and it runs as high as 1200 kw.; but it holds very even day and night with no marked peak loads. The power factor seems to vary somewhere between 85 and 90. Only one turbo-generator set is operated at one time.

During November, 1917, the West Branch substation was not operated, it not having been completed until Dec. 4, when it was turned over for the first time.

Carbon Coal Briquettes as a Substitute for Anthracite

The committee on minerals of the Canadian Conservation Commission has issued a report prepared by W. J. Dick, mining engineer to the commission, respecting the proposed production of carbon coal briquettes in the Western provinces. He finds that briquettes made from coal waste, or slack, which could be purchased cheaply at the mines, can be laid down at many points in the Prairie provinces at a lower cost than anthracite. He gives the following estimate of the saving which would result by the use of carbonized briquettes in place of

anthracite in certain cities and towns in Manitoba and Saskatchewan, pointing out incidentally that the price of anthracite is likely to increase:

Portage la Prairie, nothing to 45c.; Carberry, 80c. to \$1.30; Brandon, 85c. to \$1.10; Virden, 95c. to \$2.30; Moosomin, 95c. to \$2.30; Wolseley, \$1.45 to \$1.70; Regina, \$1.75 to \$2.40; Moose Jaw, \$1.70 to \$2.50.

The report recommends the establishment of a plant at either Estevan or Bienfait with a capacity of 10 tons per hour to be operated up to half its capacity until the success of the undertaking had been established.

Unique Plan To Save Coal

In Albany, N. Y., recently, a conference was held by Governor Whitman and representatives of the State Grange, the Farm Bureau, the State Colleges of Forestry and the Conservation Commissioner, to discuss ways and means of saving more than a million tons of coal by the substitution of wood. In this connection an experiment recently worked out by Professor Mandenburg, forestry specialist of the Michigan Agricultural College, in conjunction with the agricultural agent of the G. R. & I. Railway Co. will prove of interest. It was demonstrated by these gentlemen that there was a large demand for stump wood in the larger cities of Michigan, especially Grand Rapids and Detroit, and that \$2.15 per cord was offered for it by the dealers; that about three dollars' worth of dynamite would blast out and break up stumps containing an average of eight cords of wood.

There are many advantages connected with this idea. Merely cutting down trees and using the wood for fuel may take care of a present pressing need, but the practice represents an economic loss in the end; whereas clearing stump land represents an economic gain, because after the wood is burned there still remains the virgin farm land to be used in increasing the Nation's food products.

Using stump wood for fuel not only conserves coal but it relieves freight congestion and releases many cars at present employed in the hauling of coal. True, some of the stump wood would have to be hauled by rail, but such haulage would be purely local and probably most of it would be by team haul, whereas coal shipments frequently have to traverse several states.

The New York conferees estimated that the cutting of one cord of wood from each acre of farm lots in New York State would in itself save 1,125,000 tons of coal. If coal could be saved proportionately in other states, it can readily be seen that the coal conservation would foot up an immense aggregate and that railroad equipment that could be used for other purposes would be released to the extent of thousands of cars and many locomotives.

Library of Congress Wants Back Number of "Coal Age"

Any reader of *Coal Age* who has a complete copy of the Feb. 24, 1917, issue of this paper that he can part with, is urged to send it to Herbert Putnam, Librarian of Congress, Washington, D. C. The National Library desires to complete its files of our publication, and we are now out of print on this particular number.

Anthracite Coal Stripping—III

By THOMAS F. KENNEDY
Scranton, Penn.

SYNOPSIS — *The economic limits of the stripping are or should be systematically staked out in such a way as to facilitate cross-sectioning. Railroads, streams and certain other features on the surface must be amply protected from subsidence.*

HAVING established the economic stripping limit upon the plan, the next step in the problem is the staking out of the overburden limit upon the surface. Before the stakes can be set, several questions must be considered and definitely decided. The most important one is the method of the removal of the overburden. The nature of the overburden, the strike, pitch, drainage, topographic conditions, etc., must be studied thoroughly from the plan and cross-sections. If a steam shovel is to be used, the approximate path of the shovel should be traced by the engineer from the beginning of the removal of the overburden to the last cut upon the proposed stripping area.

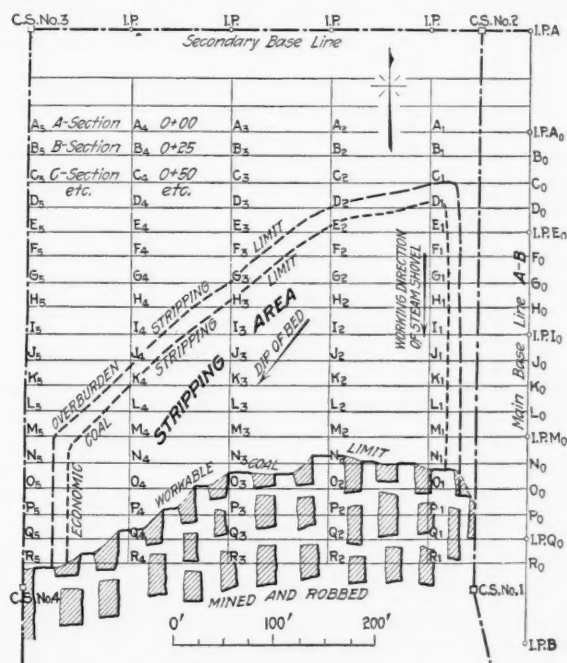
To explain more clearly the establishing of the overburden limit, reference is made to a typical example shown on this page. Studying the plan, the working direction of the steam shovel is seen to be north and south. The primary, or main, base line is run approximately parallel to the path of the steam shovel; and a secondary line, used as a reference line, may be laid out perpendicular to the main base line. Assuming cut-stones of the property are upon the surface, the stripping limit is roughly laid out upon the ground, by a few stakes. The placing of these stakes gives the transitman in charge an idea of how far beyond the stripping limits the elevations should be taken. Referring to the diagram, it can be seen the east property line is practically parallel to the path of the steam shovel. The main base line AB is laid out as follows:

Set up the transit on the northeast cut-stone No. 2, backsight on the southeast cut-stone No. 1, turn an angle of 90 deg. east and set the iron pin A (1 in. in diameter and 3 ft. long) 50 or 100 ft. from cut-stone No. 2, the distance depending upon the topography of the surface. The transit is then set up on the iron pin A, backsighted on northeast cut-stone No. 2 and a 90-deg. angle turned to lay out the main base line AB, placing an iron pin every 100 ft., so that the line will be long enough to be used as a working basis for cross-sectioning the proposed stripping area.

The cross-section interval may be 20, 25 or 27 ft. The 20-ft. cross-sections develop comparatively accurate results, but necessitate more field and office work than the 25- or 27-ft. intervals. The 25-ft. sections produce practical results, with speed in the field and a reasonable amount of work in the office, while the 27-ft. cross-sections entail a large amount of computation in the field but facilitate calculations in the office. The 25-ft. cross-sections, which seem to be the most practical method in use, is preferred by the writer. Referring to the plan, stout oak stakes, 1½ in. square by 2½ ft. long,

should be driven on the main base line every 25 ft. and lettered as shown. The cross-sectioning of the stripping area perpendicular to the path of the steam shovel furnishes more sections for monthly estimates of overburden removal than sections run parallel to the working direction of the shovel.

In marking the stakes there are several methods which give the required results, but a system should be used so that the work is reduced to a minimum. A method in practical use will be described briefly. The first section is known as the A section, or 0+00. Starting with the main base line AB, the first point and each succeeding 100-ft. point upon the cross-section is lettered A₀, A₁, A₂, etc. The second section is known as the B section, or 0+25. The 100-ft. points upon the section are lettered B₀, B₁, B₂, etc. The same principle



PLAN SHOWING METHOD OF STAKING OUT ECONOMIC COAL-STRIPPING LIMIT

applies to all the succeeding sections, and if the alphabet is exhausted, 1-A, 1-B, 1-C, etc., should be used. Each 100-ft. stake upon each section should be marked properly with blue keel, indicating the letter with its proper subscript.

In this system of marking stakes there are several advantages which will be discussed briefly. A point on any section is located with respect to the main base line and to the A or zero section. This being the case, the amount of descriptive matter marked upon the stake should be reduced to a minimum. The letter locates the cross-section from the zero cross-section, and the subscript locates the point upon the cross-section, from the main base line. The simplicity of using one letter with subscript enables the transitman to locate easily any point to the right or left of the stake upon the section. The fact that one letter is common throughout the section lessens the work in keeping notes. It does away

with the numbering of the section and distance from main base line upon the stake.

When all the stakes are placed upon the cross-section lines, the marking of the stakes should be checked and any errors in turning angles should be corrected. A spirit level should be used in taking elevations upon the breaks, which are located from each lettered stake by stretching a 100-ft. tape between the stakes. The nearest tenth in recording elevations upon the surface is close enough for practical purposes, while the thousandth of a foot should be considered in turning points and bench marks. Permanent bench marks should be established around the stripping so as to save time in field work when stripping operations and estimates are under way. The elevations should be plotted to a scale of 1 in. = 10 ft., vertical and horizontal, on a roll of cross-section paper, which will be described later.

The main base line and cross-section lines are plotted upon the stripping plan and the actual work of locating, or staking out the economic stripping limit upon the surface begins. The location of the overburden stripping limit depends upon the thickness of the overburden and the nature of the material which fixes the slope of the overburden excavation. By studying the map, the intersection, point Z, of section line G with the coal stripping limit line is determined by scaling the distance along the section line from a certain known lettered point G, upon the plan, and is located upon the surface by applying the scaled distance along the same section G, from the stake marked G_s. Other points upon the coal stripping limit are located in a similar manner.

ONLY OVERBURDEN LIMIT IS STAKED

Knowing the thickness of the overburden and the desired slope of the overburden excavation, the overburden stripping limit is located upon the surface by computing the horizontal distance from the coal stripping limit. The overburden stripping limit is the only limit necessary to stake out upon the surface. Oak stakes 2 in. square and 3½ ft. long driven parallel to the direction of the slope of excavation should be placed about 50 ft. apart upon the overburden stripping limit line. The stakes should be painted red to distinguish them from other stakes and should project about 1½ ft. above the surface.

When the economic stripping limit is to be staked out upon the surface, property lines, railroad tracks and other surface not to be disturbed should be taken into consideration in keeping the excavation line a safe distance away from the foregoing features, so that slides, pulling in adjoining properties, railroads, etc., cannot occur.

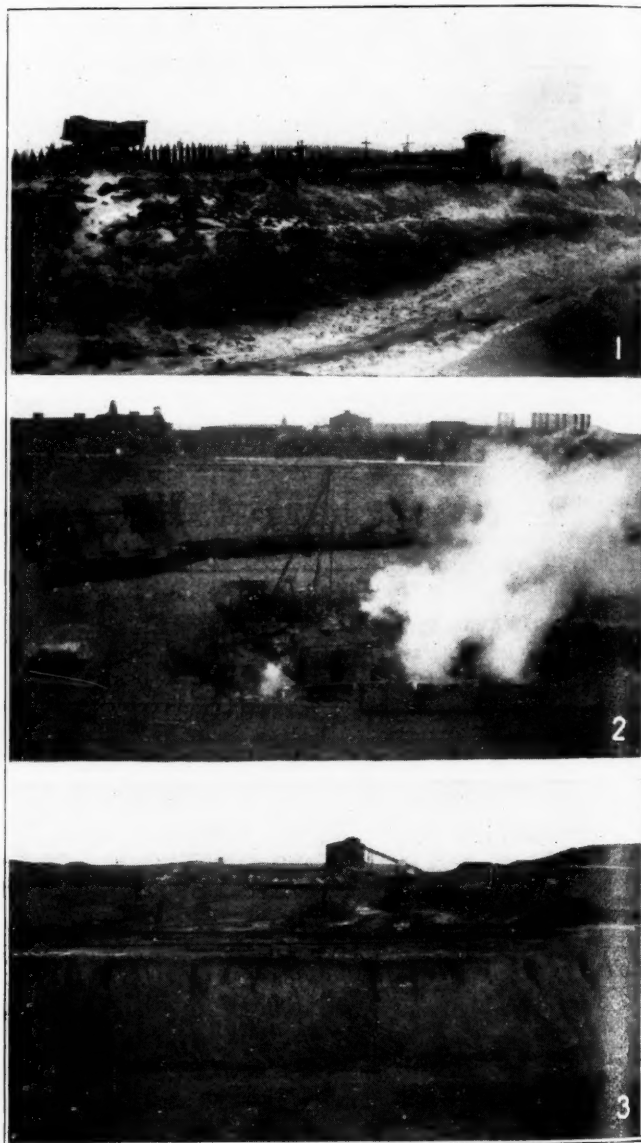
The nature of the overburden generally fixes the distance. In case of clay overburden, the safe distance, in most instances, is the thickness of the overburden in the locality of the feature not to be disturbed, while with a rock overburden, about one-half of the overburden thickness is the limiting distance. Each problem has its own peculiar characteristics in arriving at the above solution.

Photographs are herewith presented showing the many features on the surface that must be protected. Fig. 1 shows a portion of a stripping adjacent to a cemetery, which is protected by an embankment about 20 ft. in width, with a slope toward the stripping proper.

The overburden consists of about 15 ft. of clay with about 15 ft. of solid rock. This embankment left in place prevents any sliding of the cemetery surface into the stripping.

In Fig. 2, the high clay bank left in place in the distance protects an adjoining railroad from undergoing any disturbance. The overburden consists of 35 ft. of tough gumbo clay, while the railroad is located about 30 ft. from the edge of the overburden excavation.

Referring to Fig. 3, the bed of a creek and its protective embankment are seen in the foreground, with the



FIGS. 1 TO 3. KIND OF SURFACE THAT MUST BE PROTECTED

Fig. 1—Portion of stripping adjacent to cemetery, protected by an embankment to prevent cemetery surface from sliding into the stripping. Fig. 2—High clay bank in background protects adjoining railroad. Fig. 3—Bed of creek and its protective embankment in foreground; stripping about 40 ft. distant.

stripping about 40 ft. away in the distance. The bottom of the creek is about 14 ft. from the surface, but the barrier in this case was increased in width, to prevent any leakage of water into the stripping. The overburden consists of 30 ft. of clay.

This phase of the stripping problem is very important, and if disturbances to adjoining properties occur, the operators of the strippings are liable to damages.

(To be continued)

Electric Lamps in Nongaseous Mines*

By GEORGE H. DEIKE
Pittsburgh, Penn.

SYNOPSIS—*With water tunnels, copper and salt mines developing explosive qualities, who is going to define any mines as unquestionably nongaseous? Mine-safety and sanitary reasons for installing electric lamps in all mines, gaseous and nongaseous, and two additional reasons to clinch the argument in case of gaseous mines. According to the author, fussing with oil and carbide lamps consumes 30 to 55 min. per shift and reduces the loader's output 35 per cent. Insurance earnings on electric lamps will pay about 18 per cent. on the money invested in them. Electric lamps cost roughly a half less to maintain than oil or carbide lamps.*

THE attribute "nongaseous" as applied to a mine is a time-honored and battle-scarred expression. As a safety engineer with several years of experience I have been led to the conclusion that no underground operation should be designated "nongaseous." To do so would be to forecast the future of the operation and to base it upon the past record of those particular workings.

By several gas explosions occurring in mining operations that supposedly were quite unlikely to encounter gas accumulations, we have, during the past 12 months, been forcibly reminded of our inability to classify mines as gaseous and nongaseous. Among these might be mentioned the gas explosion in the water tunnel being built under Lake Erie for the city of Cleveland, the gas explosion in a copper mine in Michigan and the more recent gas explosion in a shaft near Ithaca, N. Y., which was being sunk to a bed of rock salt. If operations of this character are to come under gaseous operations, previous classifications must be revised.

The accident in the Cleveland water tunnel occurred when a blower of gas was encountered at the face of the workings about 120 ft. below the water surface and 60 ft. below the bed of the lake, at a point about five miles from shore, 23 men losing their lives as a result. After this explosion a safety engineer and three certificated firebosses were placed in charge of the work, permissible electric cap lamps were installed, and the remaining 1400 ft. to connect the two tunnels was completed without further difficulty.

The Michigan explosion occurred early this year in an old copper mine which was being pumped out and reopened. The workmen were using carbide lamps when explosive gas (methane) was encountered, resulting in a severe explosion and the loss of two lives. The work of reopening this mine was subsequently completed by the light of electric cap lamps, Koehler safety lamps being used for gas in testing. This is a forceful example of the unexpected occurrence of explosive gas in a metal mine.

The explosion in the shaft near Ithaca, N. Y., resulted from gas accumulations encountered at a depth of about 830 ft. The bed of rock salt, to which they are sinking, lies at a depth of about 1600 ft. This shaft was within 200 ft. of Lake Cayuga, and yet the intervening rock was so impervious that there was absolutely no seepage and in order to operate the rock drills it was necessary to pipe water down from the surface to the foot of the shaft. After the explosion firebosses were employed and a complete equipment of permissible electric cap lamps was installed so that the work of sinking could be carried on in safety.

In all three cases no one expected to encounter gas, and at the time the accidents occurred there was no one in charge who had the knowledge necessary to take care of it. These operations belong to such a category that the public and managers do not give the subject of the presence of gas even a passing thought. No mines or tunnels of the character named are anywhere labelled "gaseous," yet outbursts of like character have occurred in such workings before.

In a communication from Frank Haas, consulting engineer, Consolidation Coal Co., Fairmont, W. Va., he says: "The finding of gas in salt developments is not, however, an unusual occurrence, as they have invariably had considerable trouble from this source in the salt mines of Germany. We also find similar conditions in the clay mines of Ohio, also in limestone quarries, and in such shallow operations as cisterns in northern Ohio."

MUST REVISE DEFINITION OF GASEOUS MINE

The possibilities of gas emanation having been brought to our attention by the unfortunate accidents already referred to, it becomes necessary for us to revise somewhat the definition of a gaseous mine. That definition is indicated by the fact that in all the accidents enumerated the gas found was pure methane. Chemical analysis proved that no other hydrocarbons were present. Gas will be found in pervious strata wherever there has been decomposition of carbonaceous material in the vicinity. To make such a pervious bed a reservoir for gas accumulations only requires the presence of overlying impervious strata. A condition such as this may exist in strata far removed from any coal measures.

In coal-mining operations coal seams usually act as reservoirs for gas. When the coal seam is below water level the gas is retained in the crevices of the coal. An impervious rock stratum will prevent the escape of the gases even when the coal seam is above water level. Gaseous conditions may likewise be found in metal mines or in any underground operation if a carbonaceous stratum or any carbonaceous material is present, and if a porous or open container and some nonporous overlying strata are conveniently located. The fact that gas is encountered more often in coal mines than in metal mines or other operations does not indicate that the gas always comes from the coal itself. The coal, owing to its open character, can readily become a reservoir for the gases that originate in the carbonaceous

*Abstract of article read at the New York meeting of the National Safety Council, Sept. 10-14. As delivered the title was "Advantages in Use of Permissible Electric Lamps in Nongaseous Mines."

shales usually found in close proximity to the coal seams. The Bureau of Mines has approved six electric lamps for use in mine workings. Among these is the Edison electric cap lamp. During the 2½ years since this approval was granted over 90,000 of these Edison cap lamps have been put in operation. These lamps replace about equally flame safety lamps and open lights.

The main advantages of the electric cap lamp as regards safety and sanitation may be enumerated as follows: (1) Reduction of gas-explosion hazard; (2) reduction of hazard of gas burns; (3) reduction of mine-fire hazard; (4) reduction of the number of accidents from falls of roof, rock, ore, etc., owing to the illumination being more uniform and adequate than with some illuminants; (5) reduction of the number of haulage accidents owing to the illumination being more dependable; (6) reduction in the number of accidents in the handling of explosives; (7) reduction in the fire risk in breakers, tipples and headframes; (8) increase of opportunity to escape following explosions or heavy falls; (9) elimination of the burns caused by open lights; (10) elimination of nystagmus or eye strain; (11) reduction in miners' asthma and tuberculosis.

It will be noted that this list of advantages except the first two items applies to *all* underground operations. The first two are applicable only to mining operations in which explosive gas occurs, though we must all acknowledge our inability to determine in advance the possibility that explosive gas will occur in any underground operation.

OPEN LIGHTS RESPONSIBLE FOR MANY ACCIDENTS

In reference to the advantages outlined the following brief remarks may be made. Statistics show that about 85 per cent. of all gas explosions are started by open lights. Thousands of miners burned by gas every year are object lessons of the danger of the open light.

The great loss of life and destruction of property at the Cherry mine fire, at Cherry, Ill., in November, 1908, resulting from an open-flame torch coming in contact with inflammable material, well exhibits the importance of using lamps which will not ignite inflammable material. The fire in a metal mine near Butte, Mont., also proclaims the same lesson. At this mine 168 men were suffocated in the fire which resulted when an open lamp came in contact with the insulating material of a torn electric cable.

In regard to the reduction of accidents by falls of roof and coal it may be said that one large coal-mining company furnishes data that indicate a reduction in accidents of 41 per cent. from the above causes during the first year electric cap lamps were in service.

With reference to the hazard of haulage accidents it may be said that many hazards of haulage are really hazards of inefficient illumination. A man loses his light from one of several causes and as a result he is run down by a trip, is caught between cars and crushed or is crowded between the cars and the ribs or the roof. Again, high-velocity air currents, windy shots, bumps and concussions often leave not only the driver, motorman and triprider in the dark, but the miner likewise. The light from an electric cap lamp which is not extinguished by any of these causes will protect the mine worker from the hazards resulting from an extinguished lamp.

After many of the great mine explosions in this country, many lives have been lost owing to the fact that all lights were extinguished or blown away by the force of the explosion, and the surviving miners had no light by which to direct their escape from the deadly afterdamp. When equipped with permissible electric lamps the entombed men have a chance of escape as long as they have their lights with them. This fact was practically demonstrated in an Alabama mine in 1914, when men wearing electric cap lamps were able to escape following an explosion. Other men wearing open lights in the same section of the mine were lost, owing to their lights being extinguished.

The open-flame lamp, either of the oil-burning or the carbide type, requires frequent attention and adjustment throughout each shift in order to keep anything like a regular length of flame and to provide the lamp founts with oil or carbide and water. From tests made in practical experience it is found that from 35 to 55 min. is required by each employee in each eight-hour shift to keep his open-flame lamp adjusted, and even with such time-consuming attention the variation in candle power was so large as to greatly reduce the efficiency of the workmen.

USE OF ELECTRIC LAMPS INCREASES OUTPUT

Where permissible electric lamps have been in continuous daily service for a period of 30 months a greatly increased tonnage per miner is obtained which is rightfully attributed to the better illumination. The increased tonnage from this cause has been estimated at 35 per cent. In these days, when the shortage of labor is reducing the mine output materially, any change of equipment which will permit the daymen to save 30 to 55 min. per shift and which will increase the loader's output 35 per cent. should be adopted as quickly as possible.

To measure the time saved with electric lamps we have but to follow through the operation of a working shift. The mine worker calls at the lamphouse and is handed his complete lamp, locked, fully charged and burning. He places the battery on his belt and the lamp on his cap, and enters the mine to his place of working. The light is sufficient for all working purposes, properly and equally distributed, and does not change in intensity, so that his work proceeds without any interruption from that score, and he completes his shift without the necessity of giving any thought or attention to his lamp. After the day's work is completed he returns his outfit to the lamphouse to be recharged overnight. He had handled his lamp only twice during the day, to put it on and to take it off at the lamp shanty. From the standpoint of efficiency such a procedure cannot be surpassed.

The maintenance of oil and carbide lamps costs from 6 to 7c. per shift. Where sperm candles are used the cost per shift is approximately 7 to 8c. Locally these figures may be exceeded owing to unfavorable conditions. From detailed reports of two years of operation it is shown that the average cost of operating electric cap lamps does not exceed 3½ to 5c. per shift. In these figures is included the original cost of the installation, all repairs, the interest on the investment and other charges. This shows a saving of from 1 to 3c. a lamp per shift to the party who pays the bill, and the savings

accumulated will quickly mount to a convincing sum. Where the standards of the Associated Companies have been adopted the installation of safety devices of all kinds put into effect preferential rate discounts on premiums paid for workmen's compensation insurance. The insurance saving obtained by introducing permissible electric cap lamps into a mine represents a saving of about 18 per cent. on the original investment. The reduction in the premium per \$100 of payroll for permissible electric cap lamps in cents is as follows:

Coal Field	Nongaseous Mines	Gaseous Mines	Coal Field	Nongaseous Mines	Gaseous Mines
Anthracite:			Bituminous:		
Pennsylvania...	11	17.5	Indiana.....	11	15
Bituminous:			Colorado.....	13	22
Pennsylvania...	11	14	Kansas.....	10	12
Illinois.....	13	17	Iowa.....	13	15

This schedule applies only to coal-mine operations.

Northeastern Pennsylvania Engineers Have Big Banquet

SPECIAL CORRESPONDENCE

The Engineers Society of Northeastern Pennsylvania met at the Hotel Jermyn, Scranton, Penn., under the shadow of the recent order of the Fuel Administration for restricting national industry. The talk in the foyer was all about the national holiday of five consecutive days and of the nine blue Mondays to follow. None seemed to be impressed with the necessity for the Garfield sabbaths. Certainly it seemed that it was ill advised to apply such an order to Scranton, where the coal comes in by wagon or motor truck, and where the railroads do not handle the coal that is consumed locally.

There is no lack of coal, so why restrain, argued the guests, the production of manufactured articles? If the railroads can't handle that product, then let it remain on the premises; if the manufacturer can't run unless he receives raw materials by railroad, or is unable to store his product, then and then only let the plant shut down; but it is unnecessary to close the plant to save the railroads from a glut of transportation when the plants can be run without using that transportation in any way whatever. Nor is it necessary for anybody in offices to go cold when there are men to mine and clean coal, and inadequate facilities for the shipment of the coal by railroad, and where there is ample opportunity to "motor-truck" coal to the office buildings.

The Delaware & Hudson Co.'s mines were complaining of an entirely inadequate car supply. The management is piling coal on the ground in the hope that the railroads would some day be able to furnish the mines with adequate transportation, though the date seemed far off and the prospect doubtful. This reloading will cause mechanical, labor and degradation losses, but the Delaware & Hudson was prepared to risk these for the public advantage, and in order to prevent their men from leaving for other mines and industries. The manufacturers should be allowed to make and store up manufactured articles in the same way in which the D. & H. is allowed to store up coal.

It seemed to many that companies with stocks of coal might just as well work full force till their coal was depleted or their storage rooms glutted. It might be well, they argued, to refuse to replenish the stocks of

fuel of the manufacturer till the greater needs of others were filled. But to make them hold the coal needlessly was held to be unjustifiable. If they have more than they should have, then perhaps it could be reasonably taken from them by wagon or motor—not of course by railroad. To forbid them and everybody else the use of that coal for five or more days did not commend itself to the public as a politic course.

There was our friend Hamilton from Carbondale, Penn., with orders for colliery stacks and colliery screens. He rightly said that the mines must get that material from somewhere, or the coal production would not be forthcoming when it was needed. Much of his manufactured material can go out by motor truck or by wagon; all his coal is brought in from a culm dump in like manner. Why, then, close his plant down when it has no relation in much of its product or its fuel to the plight of the railroads? Why not let him work while he can?

Rufus J. Foster said the International Correspondence School was printing courses for men in the army, using for power mainly exhaust steam from a public service corporation. Surely it is better to work than to waste the low-pressure steam, which the corporation is not equipped to use, and as senseless to make restrictions of this kind as it is to require a lightless night in a town with an excess of electric power derived from a head of water.

Of course, the coal men lacked no word of loyalty. In fact loyalty was the keynote of the objection. When they felt their ability to help, it hurt to have their opportunity thwarted by an order which did not give due consideration to all the elements in the problem.

In view of the intense interest manifested in the conversation of the foyer, it seemed a pity that a clearing of the decks could not be made for a heart-to-heart discussion of the whole subject. Of course, there were side lines into which the discussion drifted. Most of the coal offices around the country, it was said, would have to be closed during the enforced Monday vacations, but as most of the executives in the anthracite region are quartered in railroad buildings the restrictions do not promise to keep the rooms of the coal companies in a state of frigid discomfort.

The menu at the banquet consisted of the following:

	Calories		Calories
Blue Point cocktail.....	50	Individual tenderloin	350
Celery	10	Mashed potatoes	100
Olives	10	French peas	75
Radishes	10	Neapolitan ice cream.....	200
Vegetable soup	75	Fancy cakes	150
Dinner rolls	150	Coffee	25
Butter	100		
Boiled halibut	125	Total	1530
Lemon butter	100		

E. S. N. P. General Orders No. 1—Penalty for exceeding the above-mentioned calorie equivalent, one year in the guardhouse. E. S. N. P. No. 2—Penalty for not fully utilizing the above-mentioned calorie equivalent, malnutrition and slow starvation.

Peter Rimmer, genial master of ceremonies, had registered a vow to make it an "eatless" banquet as far as he himself was concerned, and he nearly succeeded in separating the other guests from their meal by his energetic and megaphonic encouragement to them to "Sing, sing, sing." And sing they did, though the Canadian anthem troubled them not a little. Lieutenant Colonel Powers laughingly said it was "damnable sung," but then he added: "It was your enthusiasm ran away with you. You were just two bars ahead of the music." It was a lively "jazz band" from Wilkes-Barre that fur-

nished the music. They kept up the spirits of the banqueters and made so much noise that you couldn't hear yourself eat.

The following officers were named for the coming year: Malcom E. Walthall, president; H. A. Smith and Hugh A. Dawson, vice presidents; T. F. McKenna, secretary and treasurer. After toasts to the President and the Allies, Lieut. Col. T. E. Powers, with apologies for speaking on a military subject, discussed the work of the Royal Canadian Engineers. He said that the British army did not favor deep dugouts, the entrances to which could readily be bombed and the occupants smothered. Instead they cut slit trenches off the communication trenches long enough to hold a dozen men. When it was necessary to retire from the main trench of the front line, as was often the case, the slit trench was the place chosen for refuge. As soon as the bombardment ceased the men could resume their positions in the main trench and repel invaders. The speaker said the Germans today were using immense entanglements of barbed wire, three lines of wire each 33 ft. wide being placed in front of the trenches. The British lines are not so liberally protected, as an army's entanglements prevent its own advance as well as the advance of the enemy, and the British are always anticipating a forward movement of the troops. Dr. W. P. Mason, professor of chemistry, Rensselaer Institute, Troy, N. Y., described an explosion of a septic tank having 4 compartments 90 ft. square. The roof lifted was 12 in. thick and was composed of reinforced concrete. Dr. Mason said the methane given off by the sewage was undoubtedly the cause of the explosion, but he questioned how it was ignited. The caretaker had been over the tanks just before the explosion, but he was telephoning at a distant point when the tank let go. So he could not have been the cause of the ignition.

Dr. Mason said that bubbles of phosphine (PH_3) often escaped from sewage, and on reaching the surface they would automatically burst into flame. It is true that phosphine is not spontaneously inflammable, but P_2H_4 ,

is. This liquid hydride is always formed and is thrown into the air with the phosphine. The processes which form ammonia (NH_3) are quite apt to form its analogue, PH_3 , not much, it is true, but enough to start an explosion of methane and air. The solution given is one little comforting to mining engineers as it is just possible that phosphine might be

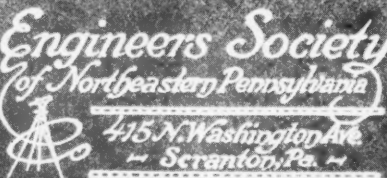
formed in the mines; if not from coal, at least from sewage. Maj. M. S. Boehm, of the 169th Battalion, Canadian Infantry, was the principal speaker in the evening. His forbears came from Lancaster County, Pennsylvania. Major Boehm exhibited some marvelous pictures taken by the Canadian Government of the fighting at the front, showing barrages, and men going over the top, and distressing pictures of "No Man's Land," ruined towns and desecrated cemeteries. Major Boehm said that the Canadian troops did not believe they had in any way excelled their British fellow soldiers. He declared the stories that it was Canada that was doing the fighting and that Great Britain was hanging back were German propaganda and deserved vigorous denial. His remarks on the coal being shipped from the anthracite region received lengthy editorial comment last week. As Major Boehm's address was important and well received, a few of his statements may be repeated. He said:

One of the questions I am frequently asked is when will the war be over? I would not be foolish enough to give the question an official answer. Personally I think the end is not in sight. As far as I have gathered from observation and reading, there is no evidence that the war is approaching an end.

Another question also that is directed at me is as to whether the Germans realize that they cannot win. They do not realize it. They are out to win and they hope to win, and we must make sacrifices such as the German people are making if we

hope to win the war. The Germans now possess twice as much territory as they had when the war began. Figuratively speaking, not a shot has been fired on German soil during the war. There will come a day when Germany will begin to realize that she cannot win the war, but even then she will go on fighting.


Germany looks back at 1917 and sees Russia out of the war and Italy not yet recovered from the staggering blow



Engineers Society
of Northeastern Pennsylvania
415 N. Washington Ave.
Scranton, Pa.

**Twenty First Annual
DINNER**

Thursday Evening, January 17
Nineteen Hundred and Eighteen
Hotel Jermyn, Scranton, Penna.



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delivered by the invaders. She recalls that Belgium, Rumania, Poland and Serbia have fallen into her hands. So she has every reason to believe that she can win. The only reason we say Germany can't win is because *we* do not dare to lose.

This great nation is getting into the war in the proper spirit. It is spending thousands of millions of dollars for training purposes, for armies and strengthening the navy. But the war is in Flanders and your men are here. How are you going to get your men to Flanders? Do you know that it would take three years to carry across the ocean an army of 1,500,000 men if a boatload of soldiers was sent across every day?

It seems to me that the one thing essential right now is the building of ships. Work the shipyards 24 hours a day, with the maximum amount of men, and then triple your shipyards. There is a crucial situation here. I have never seen a better bunch of men than the soldiers you now have in training. But the place to fight the burglar is on the lawn before he breaks into the house, and the war is being fought in Flanders. You must arrange to get them there."

Major Boehm read a letter from Charles F. Winter, Minister of Militia and Defense in Canada, in which the writer said that up to Sept. 30, 1917, out of a population of about 6½ million, 333,313 men had been sent overseas to take part in the war.

The casualties to the same date were: Killed in action or died of wounds received in action with the enemy or "presumed dead," 31,394 of all ranks; in addition, died of disease, 1514; wounded, 87,657; missing, 1298; prisoners of war (Major Boehm said most of these were men gassed at Ypres), 2580. The total casualties up to Sept. 30, were 124,443. The total number of recruits in the Canadian Expeditionary forces who gave their birthplace as the United States or claimed to be American citizens living in Canada was, to the same date, 7793.

The total contributions in Canada to the Canadian Patriotic Fund up to Oct. 30, was \$30,863,338.58. This shows how Canada is dedicating herself to the war. Only 250,000 of the 333,313 men reached the front, as many under trial were found unfit. Almost half of the acceptable men have since appeared on the casualty lists. It is interesting to add that 430,000 men volunteered, or one man in every fifteen. It will be noted how small is the record percentage of non-Canadian soldiers enlisted in the forces of the Expeditionary Force.

It may be added that 37 members of the Engineers' Society of Northeastern Pennsylvania are now in the United States service, the outgoing president, Frank J. Duffy, being now at Fort Hancock, Georgia.

Rocky Mountain Coal Mining Institute To Resume Activities

At the last meeting of the Institute, which was held June 18, 19 and 20, 1917, at Glenwood Springs, Colo., it was decided to postpone any future meetings indefinitely during the continuance of the war, unless the Board of Directors should decide that it is to the best interest of the association and its members to call a meeting at an earlier date.

It now appears that practically all the large scientific and engineering societies are continuing to hold their meetings, as many subjects are coming up that require discussion, and the Rocky Mountain Coal Mining Institute has placed the matter of resuming its activities before the Executive Committee. That body will submit a report in a short time, and the Institute membership will receive due and timely notice thereof.

"Coal Age" Indexes Now Ready

Indexes to *Coal Age* are furnished free to all who ask for them. The index for the last half of 1917 can now be obtained by addressing a request for one to the subscription department of *Coal Age*, New York City.

American Coal Trade Shows Increase

Out of a total of 1,024,487 tons of coal imported into Brazil during 1916, the United States supplied 814,212 tons, the remainder being furnished by Great Britain. Since the outbreak of the European war and the British trade restrictions on Welsh coal, which formerly monopolized this market, American coal has gradually been finding a foothold in Brazil. This remarkable increase in the coal trade with the United States, however, must be attributed almost entirely to the abnormal war conditions. American coal interests have failed to follow their British competitors in establishing local coal deposits, or yards, and have sold their coal in lots of almost any size for ready money whenever the occasion arose. With such methods as these the business will probably not have a very permanent foothold when the British restrictions are relieved.

Some Do and Some Don't

BY H. S. SALMON

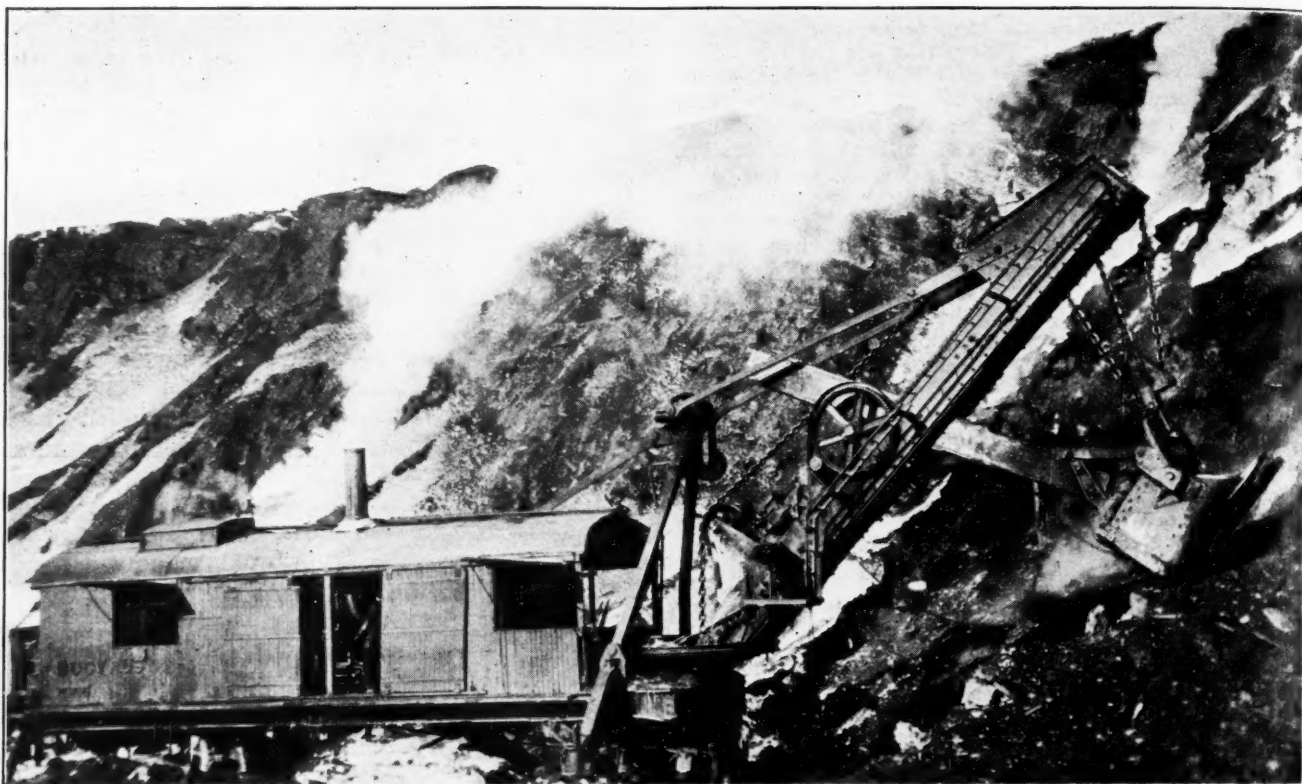
Chief Mine Inspector, Tennessee Coal, Iron and Railroad Co.,
Bessemer, Ala.

"There's miners an' miners," sez Foreman Bill,
As he tamped tobacco in his old corn cob.
"There's them that won't an' them that will,
An' ye'll find both kinds on this here job.
Ye'll wanta know, if ye're a thinkin' man,
Jest what I means by the "will and won't."—
An American miner helps all he can,
An' a lazy, shackin' slacker don't.

"A dog-gone slacker—dern his hide,
'U'd look like a German if ye saw inside,
Fer he won't work reg'lar fer anyone,
An' our boys can't fight ef the mines don't run.
Whenever he lays out of his place fer a day,
The Kaiser rests easy when he hits the hay.
They're careless, too, when they do make a shift,
An' if one gets hurt that's a heap of a lift
Toward helpin' the Germans hold their line;
But a miner that's up in the hospital won't
Help us much toward crossin' the Rhine.
Do you see what I mean by "Some do an' some don't"?

"An American miner ye'll find true blue,
Ef ye cut him open an' look him through.
He'll work every day to get out the stuff
To help our boys call the Kaiser's bluff.
He knows when he shacks without any cause,
That the Huns take a drink to him in applause.
He watches close that a rock don't drop
An' send him up with the slackers on top;
Fer he's down there with his shovel an' drill,
Doing what a slacker could be doing but won't.
He is the man who can help win and will.
Now you see what I mean by "Some do and some don't."

Nineteen thousand acres of land in the Nenana coal field of Alaska have been divided into blocks and will be offered for lease by the Interior Department in the near future. That portion of the field which is the more accessible has been surveyed and divided into leasing units. These units which range from 160 to 1664 acres have been arranged, it is believed, to permit of the most economical mining.



Reclaiming the Culm Pile

By G. D. EVANS

Pottsville, Penn.

SYNOPSIS—*Considered an eyesore and of no value whatever as marketable fuel, the many culm banks in the anthracite fields are now being sent to market. A brief description is given of one of the many plants that are now shipping this product.*

NO LESS than 15 per cent. of the anthracite coal going to market today is being recovered from culm banks. In years gone by the visitor to the anthracite coal fields, on noticing these huge, unsightly black heaps, would question whether they ever would be used. Usually, the answer was, "Probably some time." This time has now come, and these culm piles, great and small, which for years have been eyesores to the communities resting within their shadows, are the source of much of the power and energy of the country. Were it not for the coal being recovered from these banks, the present coal shortage would be even more serious than it is.

Until a few years ago, the prices for the steam sizes of anthracite were so low that these sizes were regarded by the coal companies merely as a byproduct. They were shipped to market only because the coal had to be handled in the breaker with the prepared sizes, and it paid better to ship them at almost any price than to store them. At times, there was positively no market for No. 2 and No. 3 buckwheat, and therefore hauling away from the breaker and storing became necessary.

Some years ago, the companies began to turn their attention to the banks which had been dumped in the early days of mining at points handy for loading and transporting to an operating breaker. By means of this extra coal handled at a low cost per ton, breakers at mines which had fallen off in production of fresh-mined coal were kept running at full capacity.

When, a couple of years ago, the demand for steam sizes began to grow in leaps and bounds and to set a price for these sizes which made it possible to prepare them at a fair profit, corporations and individuals began to turn their attention to the banks. Washeries began to spring up wherever there was a bank large enough to warrant the erection of an operation. Now some washeries are shipping 50 tons a day, and others are producing as much as 2000 tons in a day. Many banks are being loaded into railroad cars and shipped without any preparation, though most of this coal is mixed with run-of-mine bituminous for steaming purposes.

There is an idea prevailing that this bank coal, having been released from its natural bed underground and deposited for years on the surface, has deteriorated in heat value; but analyses show practically no loss in fixed carbon or B.t.u.'s. If prepared with the same care as fresh-mined coal, its heat value is essentially the same.

One of the largest shippers in the anthracite field, producing bank coal only, is the Ashton Washery of the Lehigh Coal and Navigation Co., near Lansford, Penn. This plant was built for a daily production of 1200 tons and has shipped as much as 58 cars, or 2300 tons,

a day. It is equipped with the most up-to-date machinery for moving the bank and cleaning the coal, and is sending to market a carefully prepared product.

The bank is loaded into steel dump-cars by two steam shovels, a Marion model 70 and a Bucyrus 70 C with 2½- and 2-yd. dippers respectively. The dump-cars are Clark Car Co. latest type patent automatic dumps, built by the Cambria Steel Co. They are of standard gage, with a capacity of 810 cu.ft. The leading illustration shows the Bucyrus shovel.

The cars are hauled by two 60-ton locomotives to a point directly back of the center of the breaker, or washery, and the contents dumped into a chute leading to a gunboat pit, as shown in Fig. 2. The material is hoisted by the gunboats up a double-track plane to the tower and dumped into a hopper chute from which it is regularly fed to a bull shaker by means of a drop gate operated by a steam-driven piston.

Operating the gunboats are a pair of 36 x 60-in. Vulcan engines equipped with steam brake, steam reverse and Roybel safety overwind devices. There is also installed a Strong, Carlyle & Hammond emergency throttle closer. The breaker machinery is driven by a pair of 22 x 42-in. engines, connected to the main shaft by a 36-in. belt.

An electric motor is now being installed to take the place of the breaker engines, and an idea of the economy of the proposed change can be obtained from the photograph of the washery partly hidden by the exhaust steam from the breaker engines (see Fig. 3). The methods used in the preparation of the coal are about the same as those adopted at most modern breakers. The washery is equipped with the usual shakers and rolls and 16 jigs of the Elmore and German types. One of the unusual features is the jigging of No. 2 buckwheat or rice coal.

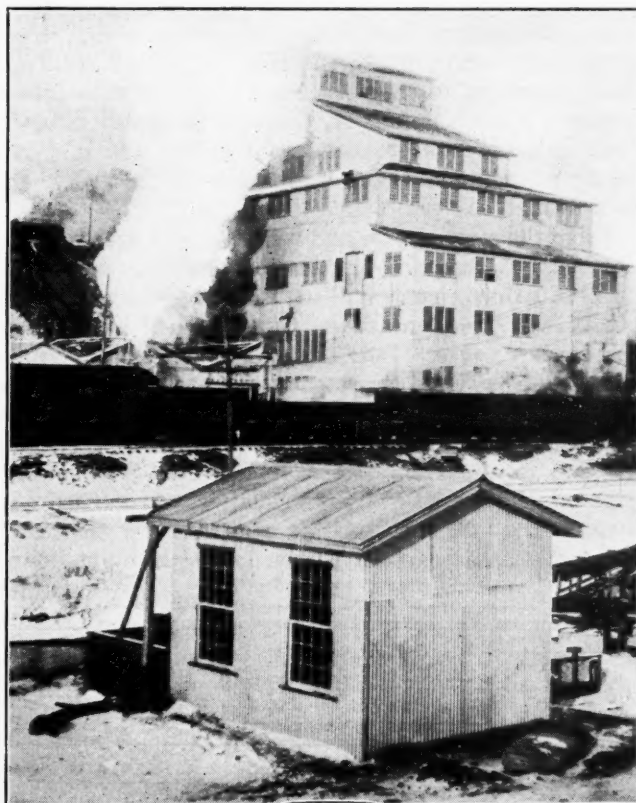


FIG. 3. ASHTON WASHERY, LEHIGH COAL AND NAVIGATION CO., LANSFORD, PENNSYLVANIA

This washery does not handle any fresh-mined product in the material passing over the bull, or lump, shaker; there is therefore only a very small proportion of coal, the little there is being picked from the rock and slate by two men and sent to the main rolls. The

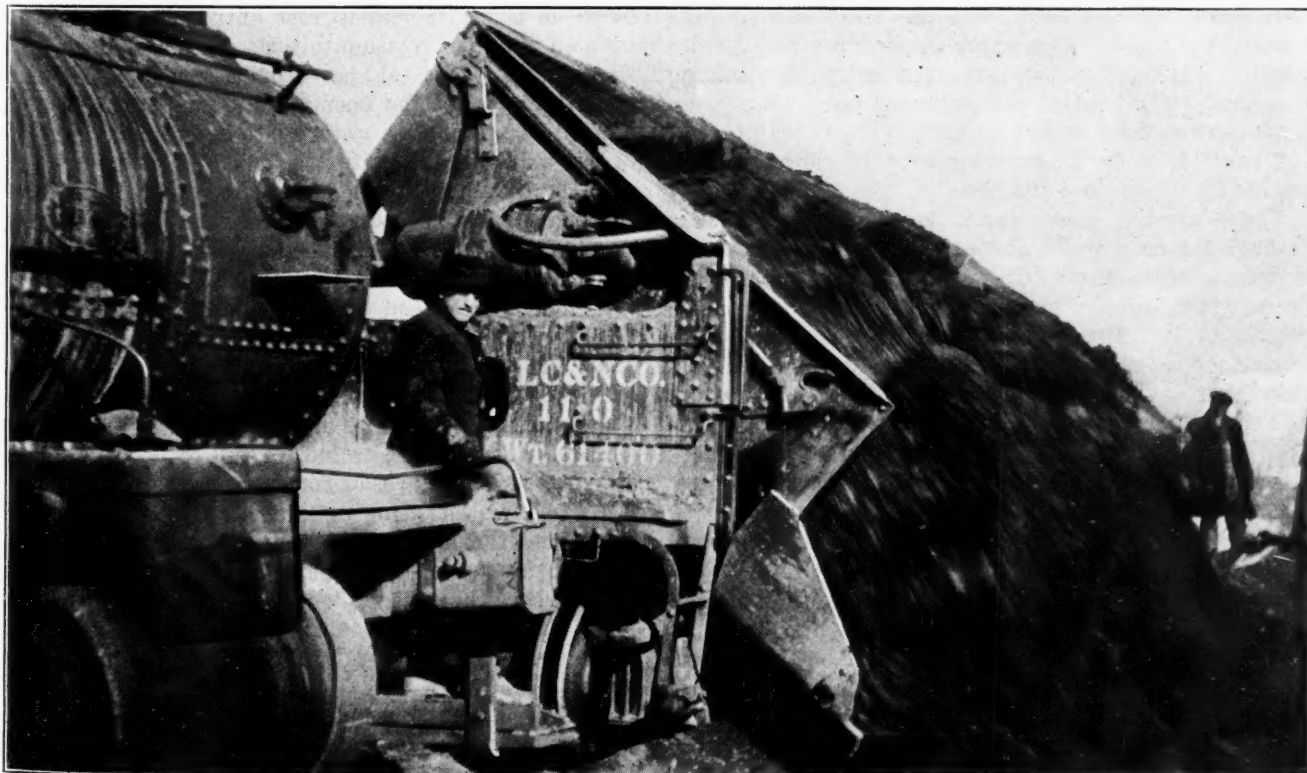


FIG. 2. CLARK CAR CO. AUTOMATIC DUMP CAR, HAULED BY A 60-TON LOCOMOTIVE

rock and slate is allowed to pass on to a rock conveyor line. The broken coal is also picked from the refuse of that size and goes to the rolls, while the rock and slate passes on to the rock line, which empties into a hopper. From the hopper, the rock is loaded into the same make dump-cars used to transfer the material to the breaker and taken by another locomotive to the rock bank.

From the main shaker and rolls, the coal goes through the usual methods of preparation until it reaches the pockets, which, contrary to the customary plan of breaker construction are set parallel with the depth of the breaker, or at right angles to the loading tracks. The coal is carried from each pocket to the railroad car by a single belt conveyor. Thus one car must be completely loaded before another is started. The cars are run to and from the loading point by an endless rope system instead of by the usual gravity method. An idea of the efficiency of this plan can be gained by the fact that 58 cars have been loaded in eight hours.

Minecdotes

Educating a Layman

Jack Richards and Bill Jones were a pair of unregenerate shotfirers in Northwestern Colliery No. 8, at Beaver, Mo. Over at Macon they had a newspaper friend whose lack of knowledge about the underground world was pitifully plain in every mine story he wrote. So they decided to "educate" him. Telephoning him to come over one day to get a big story, they encased him in pit clothes and gave him a lamp that looked like a baby teapot. Two other shotfirers—John Ramsey and Ben Evans—joined them, and the scary-looking cage lowered the five to "somewhere in the bowels of Mother Earth." Along the double-tracked entry the walking was good. The tenderfoot brightened up.

"It ain't so bad," he bragged.

"Huh!" from Jack. By the pit lamp's glow you could see his right eye close and open.

There came a place where Jack turned and went through the solid wall. It looked that way. They said it was a cross-entry. It was a little larger than a cracker box, and had two narrow strands of rail on the bottom of it. The ground began to get moist. The tenderfoot remembered bitterly ten cents invested in a shine that day. Soon he had bigger troubles than that. The timbers across the low roof played a rat-a-tat on his skull, no matter how he ducked. There was a black object ahead. Some miner had pushed a carload of coal out in the entry.

"Let's turn around and go back," suggested the tenderfoot.

Jack's face wrinkled with delight. Bill shot himself over the car and bawled to Jack: "Hist him up!"

Jack threw the head end of the visitor on the heaped-up coal car and Bill grabbed his hands. The two of them slid their unhappy friend across the coal. He felt like a mogul engine bumping across a cobble-stone street. There wasn't a spot about him his best friend would have recognized, nor that didn't hurt.

Jack went off into the blackness to one side. Then he came out and the little party continued its course. There was a mighty detonation to the rear, a broad red flash and a crash. With it came a fearful rush of wind that blew out the layman's lamp and sent his hat somewhere.

Meanwhile Bill was darting in and out of the darkness, and in his wake came the boom of the big cart-ridges and the sudden impact of tornadoes and cyclones.

"Come!" commanded Jack, grasping the tenderfoot's hand. "It's your turn."

They squeezed through between a loaded coal car and the neck of the room, a space so narrow that it would have taxed the skill of a cat, and holding up his pit lamp, Jack pointed to two sinister looking objects that resembled the mustache of a Mongolian pirate. Then he said abruptly:

"Touch your lamp against one of them!"

"Not on your life!" cried the tenderfoot, backing off.

"If you don't, I'll—I'll lose you!"

The threat was effective. The sufferer approached his doom with the same confidence that a woman picks up a garter snake. There was a fizz of tiny stars that follow the ignition of a skyrocket. The tenderfoot made a wild break for liberty and got wedged in between the coal car and the room neck. A free panorama of all the wicked things he'd ever done swept along the black avenue.

"Well, why don't you go through?"

It was Jack sauntering leisurely along behind, careless of the two sputtering fuses in the room. He extricated his companion, who indignantly complained:

"That's the way with you fellows; you stand in front of a cannon till it blows your head off and then you lay it on the company!"

Soon all the shots were fired, and the squad sat down on some timbers to rest until the men who had been on a similar mission to the west joined them. And while waiting they told how Tom Francis, a Welshman, superintendent of the Loomis mine, had stood all night down in the mine with water up to his neck, laying brick across a cave-in, so as to stop an inundation from destroying the mine, and had been given a gold watch and the thanks of the company; how Dave Williams, day engineer, had stayed by his machine with the room burning above and below until every man had been hoisted from the mine; and how in the days of the big strike young Dannie Hughes, night operator, had fingered his instrument and aided the movement of trains all night long despite the crash of glass from rifle balls and the singing of deadly missiles overhead. It was a wonderful story, the story of the mine, as full of courage and of sacrifice as anything that comes from the battle-field.

At last two flickering lights were seen down the dark entry and the shotfirers of the west section came up like shadows and the group meandered to the "bottom," where the cage waited. Jack pulled a cord to one side of the shaft, and presently from somewhere above came two cheery blasts from the whistle and the cage glided upward.

Night had come on and the stars were shining. The layman looked at the dome above with a feeling of relief. Jack waved his hand upward and chuckled:

"No danger of that roof falling."

THE LABOR SITUATION

General Labor Review

The big meeting of mine workers is ended. Its big job was to ratify the Washington agreement, which it did most satisfactorily. There should now be peace in labor circles till after the war, or till 1920, whichever comes first. The opportunity to develop patriotism and exhibit it was, however, the most evident element in the meeting. Perhaps the spirit of nationalism and sacrifice will endure long in the minds and hearts of the participants after the questions regarding the Washington agreement are forgotten. We pass over Howat; surely no one can forget him too soon. He does not in any way represent unionism.

The decision about the Central Competitive Region, apparently reached when the leaders were napping, may be quite important. The mine workers are divided in their opinion about it. That is evident, or they would not have reversed themselves as they did. Perhaps the operators, outside the anthracite region, will be found almost equally divided. The matter does not seem one for bitterness. Only regions with low wage scales, which does not necessarily mean with low wages, need to fear the new arrangement. Really we do not anticipate that in any sections of the country, the operators or the mine workers will try to work an injustice on the operators or the mine workers of any other section. Still every section knows or thinks it knows its own needs and its own woes best. When a vote is cast for unification, the unifiers as well as those who are urged into union are apt to suffer from the change.

LABOR HYPHENATES OF LAFLIN MAKE TROUBLE

Strange to say, there has been a strike in the anthracite region at the Keystone colliery of the Traders Coal Co., near Laflin, Luzerne County. Yet it is not so very strange after all. Laflin has been a center of the dual membership, so severely scored at the International meeting. Many men belong not only to the United Mine Workers but also to the International Workers of the World. They are a bad brand of hyphenates.

The trouble started on Jan. 21, and 350 men have been idle for a week. One day an engineer reported late for work, so the men could not be lowered into the mine in the cage in time to start work. The superintendent told the men to go down by the slope. One man is alleged to have become abusive, and he was discharged by the superintendent.

This enraged the employees, who are mostly Italians, and placards were placed at various places by the men, declaring a strike. A grievance committee was sent to the company's office, but the company refused to heed the request for the superintendent's dismissal.

A TALK WITH THE BOSS AND THE STRIKE ENDS

At the Bellevue mine of the Delaware, Lackawanna & Western R.R., coal department, the miners went on strike because they were not paid at the time desired and expected. A vote to return to work was taken at a meeting attended by an official of the company, who made it plain that the employees would be paid in a satisfactory manner. The practice of meeting the men face to face in conclave is a good one and to be commended. When there is as little to complain of, as in this case, it will always cure the difficulty.

The miners in many parts of the country are being induced by the National Railroad Administration to clear the railroad tracks. Just as the miners helped valiantly in the rebuilding of the tracks up Cabin Creek in West Virginia after the great flood so now in the West Virginia coal fields hundreds of miners are helping to remove the

snow fall which prevents them from doing their work. They may be asked to do more than this, for there have been washouts along the main line of the Norfolk & Western Ry. and at several other points.

With Howat's promise of a strike, to include many of the mines in the Southwest, troubling us, it is pleasant to turn to the fact that just now almost the only trouble in that region is at the Smith, Scott & White strip-pits, near Cambria, Kan., where the workmen quit on Dec. 29 because of a controversy over the assigning of derrick men to other work because they were regarded as incompetent to fill their jobs.

As usual, Alex Howat says the men are not striking and the matter cannot therefore be settled. There is, from his point of view, nothing to settle. The local union, however, seems to scent that there really is a strike, for it has passed an order that any man who takes the place of the derrick workers pending an adjustment will be fined \$35. In all, there are 105 men in the three strip mines, and the production exceeds 900 tons a day when the pits are working.

Kansas is now in the midst of a controversy over the examination and licensing of night firemen, who in practice and under the agreement signed a few months ago may operate the engines at night, and may hoist and lower shot-firers and other workmen when called upon to do so. One of the state inspectors is said to be insisting that these men shall be engineers, though the custom here as elsewhere is to put firemen on the night shift and later advance them to engineers when they receive a license. It is not thought necessary that they shall receive a license for the night turn where the work is not hurried and difficulties are not likely to occur.

The Convention at Indianapolis

The attitude of the mine workers at the Indianapolis Convention is well illustrated by a resolution from Klein, Mont., urging that 25c. a month be collected from the membership in aid of the Red Cross. The resolution did not carry, it is true. The United Mine Workers of America feel that the obligation on them is one which comes to them rather as citizens than as a union, but none the less the 25c. a month, and more than 25c., will doubtless be forthcoming.

Let us not forget to say that though the miners are defending themselves fiercely against being called slackers, they are publishing in their "Daily Convention Reporter" the long list of strikes in Kansas, which show a slack and disloyal spirit. When an organization like the Mine Workers confesses the sins of certain of its members, though few in numbers, it goes a long way toward shriving itself of what sins have been committed. It is a mark of patriotism that it is so ready to point out and make public the errors that are being, and have been, committed by a little band of willful men who are not worthy of membership in this union of patriotic and devoted citizens.

A terrible indictment against Alex. Howat is this long list of strikes permitted during a national crisis. It hardly seems possible, however, that the penalty clause will wipe them out in the future. Patriotic propaganda and patient work on the part of union men is the only thing that will end the disgraceful insurgency of the Southwestern States.

Another answer to those who would say that the union as a whole is unpatriotic was furnished by the vote to pay John P. White his salary of \$5000 a year as adviser to Dr. Garfield in the Fuel Administration. It was a clear indorsement of his patriotic support of a policy of conciliation and coal production.

The mine workers voted to condemn House Bill 195, now in Congress, which grants a preferential right to the State of Oklahoma to purchase a coal acreage underlaid with 3,000,000 tons of coal. The mine workers do not object to state ownership, but to the prospect, or rather certainty, that the coal will be mined by convict labor.

On Jan. 21 the most important decision of the convention was made by the assembled delegates. They approved the Washington agreement and so adopted all the wage scales, district and subdistrict, for the period of the war, provided it does not last beyond Apr. 1, 1920. The vote was overwhelming. There never was any real opposition to the Washington agreement, though Howat and a few of his political aides by their activity gave the impression that there was.

HOWAT'S POLICIES MEET WITH DISAPPROBATION

During the few weeks preceding the convention Howat wrote acquaintances in various states and told them that his delegation was lined up solidly in opposition to ratification. He guaranteed that he had mustered strength enough to prevent the convention from registering its approval. He held out hopes of benefits to those who would line up with him. He forecasted that by reason of his leadership in defeating the penalty provision he would be able to name the presidential candidate.

But it was not to be. Howat is a broken man. The United Mine Workers are citizens of the United States. Some day Howat will learn that fact. At present he thinks they do not realize there is a war and do not know that they have a duty to perform.

So, from now on, the mine workers and the operators can devote themselves steadily to the mining of coal and not waste time over organization and discussion like a lot of Bolsheviks. Unfortunately the country is so short of locomotives and cars, especially the former, that the mine workers and operators have too many idle days.

WHO SHALL MAKE CENTRAL COMPETITIVE CONTRACTS?

Jan. 22 appeared only less important than the day preceding. However, appearances were deceiving, for by a later vote, on Jan. 26, the work of the day was finally made of no effect. By a vote of 654 in favor and 605 against, the older and cooler heads of the United Mine Workers failed to recommit to a special committee a resolution granting outlying districts representation in the wage conferences of the Central Field. The vote came after two days of debate. The International officials and older heads in the union contended that the amendment was impracticable, for the operators would never consent to meet the men from other districts and have Kansas, for instance, help to decide what Ohio should pay its men.

The resolution was capable of many diverse constructions, but it plainly stated that in no case could the International officials call a wage conference or negotiate a wage scale without having first called into conference the officials of all outlying districts, including the anthracite region. Moreover, provision was made to give the representatives of all the districts voice and vote in the formulation of a policy and in the writing of the wage demands presented to the operators. These representatives would also have a right to a voice and a vote in the conference negotiations, even though the conference would only deal with wage questions directly affecting the Central Competitive Field.

HAYES, SAVAGE AND KENNEDY OPPOSE RESOLUTION

President Hayes contended that the present "policy committee" (composed of the district presidents of all the districts), which is called together immediately after a scale is drafted to consider that scale, is sufficient protection for the interests of the outlying districts. Secretary Savage, of the Ohio district of the United Mine Workers, declared that the resolution was dangerous, as the mine operators of Ohio and western Pennsylvania are even now considering a withdrawal from the Central Competitive District. Any attempt to ring in or consult operators or mine workers from other districts, in short in a degree to enlarge the Central Competitive District, would fail in the judgment of Secretary Savage.

All the anti-administrationists—the outs—were lined up solidly behind the measure which was introduced jointly by 14 local unions located in Missouri, Kansas and Illinois. Thomas Kennedy, President of No. 7, a district centering around Hazelton, also protested against the resolution. The anthracite district leaders, as was said last week, are not at all disposed to try to control, or even take a part in controlling, the bituminous wage contracts. They desire to go along in their own way. Tom Kennedy said that if the arrangement suggested was made it would do the union much harm in the anthracite region. The anthracite operators, he believed, would have granted the mine workers complete recognition had the union consisted solely of the mine workers of the hard-coal region. The anthracite operators do not care to meet a general conference of all the mining interests because they realize that the anthracite men would be outvoted. They have always refused to meet with the bituminous mine workers.

The debate was bitter, and the delegates indulged in personalities, charges and countercharges. Half the afternoon session was devoted to maintaining order. The problem is a difficult one. The representatives of the mine workers and the operators of the Central Competitive District meet with the International officials, and a contract is written which the officials of the district and the International officials assent to, subject to the will of the union.

TO DATE OUTLIERS HAVE ONLY RATIFIED CONTRACT

The policy committee of the whole union considers whether the contract is satisfactory enough for submission to a referendum. Then if it is, the referendum follows and everybody votes whether in the Central Competitive District or not. It is clear that the Central Competitive District has a great deal of power. It virtually determines the scale for the other districts, for they ultimately line up with the scale accepted in the district first signing, not only because it signs first, but because its size gives it predominance. However, while in a way it controls the settlement, in another way it is itself controlled. Ohio might complain that Washington votes on the Ohio scale, and Washington can retort that Ohio writes a scale which Washington is more or less compelled to follow.

On Jan. 23, Samuel Gompers, president of the Federation of Labor, made a speech in which he said that organized labor must uphold the hands of the Government, even though labor might be called upon to make some sacrifices. He said that these sacrifices were imposed on mankind by the progress of evolution. They are but the penalties which democracy must pay if it would enjoy freedom and justice. Mr. Gompers then declared that no one who had been suggested to conduct the war affairs of the Nation in place of the civilians who were now charged with that responsibility had ever performed a public service. He urged the retention of the present government and civilian heads as executives and advisers in the prosecution of the war.

MORE MONEY TO BE SPENT FOR TOM MOONEY'S DEFENSE

The convention voted unanimously to aid Thomas Mooney, Rena Mooney and Edward Nolan, charged with being plotters of the San Francisco bomb explosion, which took place during a preparedness parade. Direct appeal will be made to President Wilson, asking him to prevent the execution of Mooney. A special committee will determine how much money shall be expended in the defense. Several thousand dollars have already been contributed by the International Executive Board and other thousands by local and district organizations.

John P. White, on Thursday, Jan. 24, made a ringing speech, and as a result the convention overwhelmingly defeated a resolution to take the power of appointing organizers out of the hands of the International President. The proposal to do this was championed by John Lawson, of Colorado, the rules of order being suspended in order to permit him to speak.

James Moran, acting president of the Colorado district, charged that Lawson was employed by the Victor-American Fuel Co., of Colorado, as a labor agent, and by every

reason of right should be ousted from membership; and Lawson did not deny the charge. The whole morning session was unruly. The conservative delegates finally forced consideration of a motion to close debate. The chair endeavored to forestall this action so that International President Hayes might be heard, but the chair could not succeed in getting its will accomplished. Mr. Hayes' speech was not needed, as the majority was already with him.

On Jan. 26 Alex. Howat, the irrepressible Kansas President, threatened to call a strike in Kansas at all the mines where fines had been collected under the Washington agreement. He declared he would "pull" the miners out as soon as he got back to Kansas. He managed to get his speech before the delegates in a plea of personal privilege. He declared that he was injured by ex-president White's reference to him as a demagogue. Howat received little applause from the convention, and by a chorus of slurring remarks the convention evidenced its disapproval of the threatened action.

Mother Jones, who has always during her 83 years denounced courts, introduced a resolution commending the Supreme Court of Arizona for deciding the election contest in favor of Governor Hunt and against his rival acting-Governor Campbell. She had, however, to return to form by bitterly denouncing the Supreme Court of the United States and all other state supreme courts which had rendered decisions affecting the mine workers' organizations.

UNDOES ALL THE WORK OF TWO PRECEDING DAYS

On Jan. 26 J. C. Lewis, of Iowa, managed to secure the passage of the following resolution nullifying the victory of the Friday proceeding. The resolution is reprinted in full, for it is likely to be a matter of some debate later.

Whereas, We believe that the operators and miners of the outlying districts where bituminous coal is mined should be represented in joint conferences when basic wage agreements are being made, so that the representatives of each district may have a voice and vote in determining what wages and conditions shall be agreed upon for their respective districts; therefore be it

Resolved, That the International Executive Board and the representatives of the four states known as the Interstate Movement—namely, Illinois, Indiana, Ohio and western Pennsylvania—be instructed by this convention to take steps and make further and greater effort to enlarge the Interstate Joint Conference by the admittance of such as they are able to agree upon; and be it further resolved that when the Interstate Conferences are to be held it shall be the duty of the international secretary-treasurer to notify the resident officers of each district when and where the conference is to be held so that they may so journey to the city where said conference is being held, if they wish to do so, and the representatives of the outlying districts shall be permitted to sit in conference with the representatives of the miners of the Interstate Conference when they are meeting for the purpose of negotiating wage scales and have a right to voice their sentiments on questions that may affect their districts, and be it further

Resolved, That no agreement be made governing the outlying districts unless the representatives of said districts are given a voice and vote on the same.

WILL THE OPERATORS CONSENT TO NEGOTIATE?

It now remains to be seen how the operators will view the proposition. The distant date, 1920, makes it less important a consideration that it would otherwise be.

The pension system proposed by the old-age committee, whereby each miner over the age of 60 years would secure a pension of \$20 per month, was referred to the rank and file for consideration with a continuation of the committee to bring before the next international convention a report embodying the wishes of the membership.

The meeting came to a close Jan. 26, after making provision to file the \$800,000 bond necessary to appeal the judgment of the Coronado Coal Co. against the union. The Pennsylvania Mining Co. with mines in Arkansas and headquarters in Scranton, Penn., is preparing to bring suit against the union for \$500,000 before the Federal Court

Union Membership Has Increased Greatly

The membership of the United Mine Workers of America has steadily grown since October, 1910. In October, 1917, the membership had increased 75.93 per cent.

It will be noticed that in the earlier year Districts Nos. 1, 5 and 7 in the anthracite region were quite sparsely organized. This, with their more complete organization at present, accounts for the great growth in membership. However, when we add the membership in the three districts together we find that there are 65,441 union men. In 1916 there were 159,169 men engaged in anthracite region, so it is clear that there are still a few men who have not joined the union. In fact, union strength is roughly only 41 per cent. of the possible figure.

MEMBERSHIP OF UNITED MINE WORKS OF AMERICA

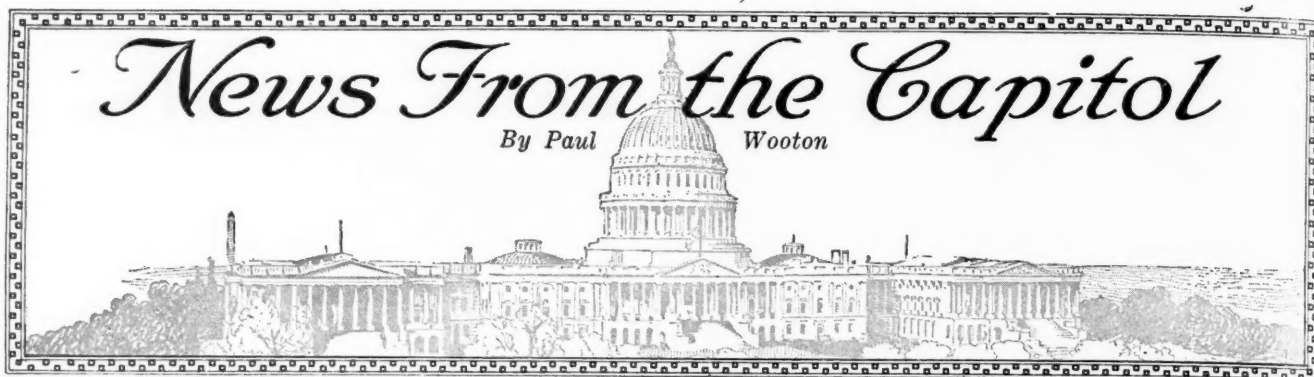
Districts Number	Location	October, 1910	October, 1917	Numerical Increase	Per Cent. Increase
1	Scranton district, Pennsylvania.....	4,930	27,550	22,620	408.82
2	Central Pennsylvania.....	31,339	45,082	13,743	43.85
3	Non-existent.....				
4	Non-existent.....				
5	Pittsburgh district Pennsylvania.....	34,562	34,900	338	0.97
6	Ohio.....	32,628	40,553	7,925	24.29
7	Hazleton district, Pennsylvania.....	2,078	13,292	11,214	539.65
8	Block coal district, Indiana.....	1,355	1,098	-257	-23.40
9	Shamokin district, Pennsylvania.....	3,078	24,599	21,521	699.18
10	Washington.....	4,459	5,591	1,132	25.38
11	Bituminous coal district, Indiana.....	16,449	23,551	7,102	43.18
12	Illinois.....	51,718	87,189	35,471	68.58
13	Iowa.....	17,550	13,288	-4,262	-24.28
14	Kansas.....	4,152	9,231	5,079	122.32
15	Colorado.....	187	5,213	5,026	2,687.70
16	Maryland.....		2,512	2,512	
17	West Virginia.....	2,085	13,953	11,868	569.20
18	British Columbia.....	3,753	4,810	1,057	28.17
19	Eastern Kentucky and Tennessee.....	726	12,322	11,596	1,597.24
20	Alabama.....	198	5,885	5,687	2,872.20
21	Arkansas, Oklahoma and Texas.....	4,604	14,632	10,028	217.80
22	Wyoming.....	5,958	6,949	991	16.60
23	Iowa.....	5,512	4,446	-1,066	-19.4
24	Michigan.....	2,532	2,005	-527	-20.81
25	Missouri.....	2,445	7,925	5,500	224.90
26	Canada.....	889		-889	-100.00
27	Montana.....	2,858	3,971	1,113	38.94
28	Canada.....		159	159	
29	West Virginia.....		4,557	4,557	
Local Union #828	Indianapolis, Ind.....	14	22	8	50.71
Totals		236,059	415,305	179,246	75.93

Western Pennsylvania, early unionized, shows almost no growth since 1910, despite all the efforts made and the undoubted progress in 1917 along the Allegheny River and its tributaries. The decrease is larger in central Pennsylvania, which was quite generously unionized in 1910; but the membership is still far from 100 per cent.

Kansas, Colorado, eastern Kentucky, Tennessee, Alabama, Arkansas, Oklahoma, Texas and Missouri have all increased their union members immensely. Maryland and West Virginia and District 28 in Canada have come into being, the latter, however, being extremely weak. District 26, also in Canada, has lost all its membership. Iowa, Indiana, western Kentucky and Michigan have lost membership in large measure.

As there were 720,971 men employed in the coal industry of the United States during the fiscal year ending June 30, 1917, according to the United States Geological Survey, the proportion of union men is 57.60 per cent. of that possible.

The extent to which unrest is fomented by pro-German influences is indicated by the fact that more than 150 Illinois miners have been arrested on charges of disloyalty to the United States, according to information given out at Springfield, Ill. Most of them are held on charges of attempting to cripple war industries by checking coal production. A large number of secret service agents have been sent into the mining districts. President Frank Farrington says there has been a great deal of pro-German propaganda among the miners, 60 per cent. of whom are foreigners, representing 29 nationalities.



[Men of the coal industry who find it necessary to get to the national capital on business these days are invited to avail themselves of the facilities afforded by the Washington Bureau of "Coal Age," which is centrally located in the Metropolitan Bank Building. The bureau is in charge of Paul Wooton, who is in a position to be of material assistance to those who have business to transact with Government officials. Have your mail addressed care of "Coal Age," Room 703, Metropolitan Bank Building, Washington, D. C., while at the capital.—Editor.]

Garfield Announces His Coal Distribution Plan

Formal announcement of the long-expected distribution plan was made by the Fuel Administrator Jan. 25. Operation of the plan is expected to result in the consumer's receiving coal from the nearest point of production. It is expected to reduce cross-hauling to a minimum and to speed up deliveries of loaded cars and returns of empties. Each state will be allotted its quota, which will be supplied from certain designated producing districts. Great care was taken by Dr. Garfield and members of his staff in the compilation of a letter to state fuel administrators, which explains the working of the new system. That letter reads as follows:

As soon as district representatives are appointed, all state administrators who may call upon them will be notified. Individual shippers and mines within those districts for which district representatives have been appointed will be notified to refer any orders or requests for shipment of coal made upon them by any member of the United States Fuel Administration to the proper district representative. State administrators accordingly should direct all emergency requests for fuel to the district representative in charge of the particular coal field from which the relief is to be obtained, rather than to an individual operator within that district. This will prevent shippers from receiving conflicting orders from different members of the Fuel Administration, and will insure more prompt attention to such requests because of their being made in the field by a man thoroughly conversant with the local situation and the available supply. No emergency requests should be made directly to Washington by state administrators unless the proper district representative has been unable to supply the necessary coal.

In order that the bituminous coal supply of the country may be apportioned equitably among the different states, and among the various consumers in each state according to the relative importance of their needs, it is necessary that the work of the Fuel Administration in regard to the apportionment and distribution of bituminous coal be not limited to the relieving of emergency shortages. Accord-

ingly, the available coal production of the country is to be apportioned among the various states, based upon previous consumption and the changes resulting from the entrance of the United States into the war. In order that cross-hauling may be reduced to a minimum and that each state may receive coals adapted to its needs, the particular fields from which each state shall draw its supply will be designated (byproduct and gas coal excepted). When this budget is complete, the consumers of each state will be notified through the press that their coal must be obtained from certain specified fields. Producers will then be allowed to ship only to consumers in the states designated, and jobbers will be required to observe the same rules. In other respects the normal distribution of coal will go on without interference.

State administrators, as soon as the tentative apportionment is complete, will be informed as to the particular fields upon which they may call for coal, and the quantities they may secure from each. When a state is currently receiving its full allotment of coal, all further needs must be met by reducing the quantity supplied to other consumers in that state. District representatives will be instructed to comply with any requests for coal made by designated state administrators up to the amount allotted to their respective states. Should any state have a demand for coal in excess of its allotment, this excess will have to be taken care of by a curtailment of consumption, unless a temporary or permanent readjustment of the allotment be made by Washington.

The foregoing is a part of the new plan, details of which are being worked out as rapidly as possible and will be announced to you as soon as they can be perfected. It should be clearly understood that it is not intended that the rights and duties of the state fuel administrators shall be lessened in any respect. On the contrary, the state administrators will retain all of their present responsibilities. The purpose of the plan is to facilitate the handling of emergencies and to define the limitation of supply. The only changes are in the creation of a new office in the field which will aid state administrators in promptly relieving emergency shortages, in reducing the number of such cases which must be referred to Washington, and in making provision for insuring that each state will receive its proper proportion of the available coal supply. In all other respects, state administrators will continue to keep in touch with Washington as heretofore.

Free Time for Detention of Coal Reduced from Ten Days to Six

Reductions in free time for the detention of carload shipments of coal at New York harbor, Wilmington, Philadelphia and Baltimore tidewater terminals, have been allowed by the Interstate Commerce Commission. Free time under the straight demurrage plan is reduced from ten days to six and, under the average agreement plan, from five to three days.

Various of the coal-mining companies, associations and dealers protested against this change. The opinion

was written by Commissioners McChord, Meyer and Aitchison. An extract from the opinion is as follows:

While in many instances the present allowances of free time have been materially exceeded, it appears that the general average detention on all of respondents' lines during the year 1916, under disadvantageous conditions, was less than the free time under the proposed schedules for the straight demurrage plan, and the figures submitted for the first part of the year 1917 indicate that the abnormal conditions have been to some extent relieved and the average detention correspondingly decreased; furthermore, that a number of shippers, under varying circumstances, have been able to conduct their tidewater business within the average free time proposed, even under the abnormal conditions which have existed. While the protestants have shown that considerable demurrage has accrued on cars and on boats from irregularity in the periods of time cars were en route over the lines of certain carriers, it also appears that the irregularity of movement has been caused to a large extent by the congestion of traffic at the ports. In other words, the record does not demonstrate that either condition is the cause or the effect, and the fair conclusion is that each in turn has contributed to the other. While, therefore, the reasonableness of any period of free time for this traffic may well depend in large measure upon a fair and efficient coöperation on respondents' part, the carriers' equipment should not be detained for storage purposes beyond any period reasonably necessary to effect its release, and, subject to such modifications as future practical results may require, our conclusion is that the periods proposed should suffice.

No Coal To Be Diverted Without Consent of Fuel Administration

Confusion caused by the diversion of coal by state fuel administrators and by chairmen of local committees made it necessary for the Fuel Administration last week to issue a number of orders limiting the authority of these officials. The coal consigned to tidewater is not to be diverted without permission from Washington. Coal consigned to byproduct coke ovens is not to be diverted except in emergency to relieve human suffering. Any coal for a destination outside of the state is not to be diverted without permission from Washington. Local committee chairmen are allowed to divert only such coal as is consigned to their community. Among the other orders issued was one making the official ordering the diversion responsible for the payment for the coal.

Weekly Production Statistics

Weather conditions during the week ended Jan. 19 are held mainly responsible for a decided slump in coal production. During that week, 8,602,000 tons was produced. This is an average of 1,434,000 tons per working day, which is among the lowest recorded during the past twelve months. Beehive coke to the amount of 527,000 tons was produced during the week ended Jan. 19. This is somewhat less than production during the week ended Jan. 12, when 562,000 tons of coke was made, but it is an improvement over the week ended Jan. 5, when 455,000 tons was made. Anthracite shipments also reflected weather conditions. Forwardings during the week ended Jan. 19 were 31,861 cars, as compared with 36,178 cars during the week preceding. These figures are compiled from the returns made to the United States Geological Survey.

Factors which limited production are not yet available for the week ended Jan. 19, but for the week ended

Jan. 12, when conditions were not at the worst, they show that 25 per cent. of the full-time capacity of the mines was lost due to car shortage. Labor difficulties caused a loss of 2.9 per cent.; mine disability, 4.3 per cent., and all other causes, 2 per cent.

More District Representatives Appointed

E. R. Clayton, of Harlan, Ky., has been appointed district representative for the coal fields located in Georgia, Tennessee and in the Counties of Bell, Harlan, Knox, Whitely, McCreary and Laurel in Kentucky. There are to be 20 district representatives appointed, of which Mr. Clayton is the sixth to be made public.

The Hazard coal field, which is comprised of Perry, Breathitt and Lee Counties in Kentucky, is to be represented on the Fuel Administration staff by R. A. Hord, of Lexington, Kentucky.

The district representative of the Fuel Administration who will look after distribution in the Pennsylvania counties of Armstrong, Butler, Clarion, Mercer and portions of Lawrence and Indiana Counties, will be F. B. Reimann, of Butler, Pennsylvania.

R. W. Gardiner, of Pittsburgh, will be the district representative for the following counties of Pennsylvania: Allegheny, Green, Washington, Westmoreland (west of the Youghiogheny River) and Fayette (in part).

J. B. Zerbe, of Cleveland, has been appointed the representative of the Fuel Administration for the coal-mining district covering the counties of Belmont, Columbiana, Carroll, Coshocton, Guernsey, Harrison, Jefferson, Mahoning, Noble, Portage, Stark, Tuscarawas and Wayne, in Ohio, and the counties of Brooke, Hancock, Marshall and Ohio, in West Virginia.

Brief Washington Notes

A revision downward has been made by the Fuel Administration in prices in the Deerfield, Massillon and Jackson fields in Ohio. The prices fixed are as follows: Run-of-mine, \$3.25; prepared sizes, \$3.50; screenings \$3. Prices prevailing before the order were: Run-of-mine, \$3.75; prepared sizes, \$4; screenings, \$3. Such operators as have complied with the terms of the Washington wage agreement may add 45c. to the prices specified.

Contracts for coal dated before Aug. 21, 1917, which contain no provision for changes in the wage scale, are not now susceptible to the addition of the 45c. increase allowed by the President. The Fuel Administrator issued a statement to that effect when he learned that some consumers had been notified that their contract price would be increased to cover the advance in the wage scale.

In order to make plain how the United States Fuel Administrator approves prices fixed by local officials, instructions with regard to retail prices and margins, which were sent to the local committees, have been made public. In the same order the right of appeal to the United States Fuel Administrator on the part of any individual is granted.

EDITORIALS

Providing a Remedy

IN CASE of sickness, it is always necessary to diagnose the case and determine the nature of the ailment before a remedy can be provided. Only a few weeks ago railroad officials were disclaiming responsibility for a shortage of fuel. The Garfield closing-down order has emphasized more than anything else that the real trouble is a lack of locomotives. It is therefore gratifying to know that Director McAdoo recognizes the situation. He has commandeered all the locomotives that will be built in the United States during January, February and March of this year. As fast as these locomotives (approximately 700 in number) are completed, they will be turned over to Mr. Smith, Director McAdoo's chief assistant, and will be assigned to those eastern roads that are most in need of motive power.

Although it is too late to correct the present trouble, it is good to know that we are at last on the right track, and that before long there will be sufficient engines and enough ships to carry all the products that the essential industries of America can produce when working at full speed. It is better late than not at all, and before we get through with our present job we will strike our real pace and quickly finish the thing we have started to do.

The War Sets Astir a New Spirit

IN THE distribution of credit for helping to win the war, we must not overlook the mine workers' union. Before the war started the union workmen in the anthracite region held that to load four cars a day was a proper stint for the working force of a single breast—namely, one miner and a laborer.

A miner who dared mine more than the customary four carloads would be regarded with disfavor by his fellows, to say the least. Even if he could load the four cars in five hours it made no difference. The men competed to see who could do the daily stint and arrive at the garden gate first. The drivers also held back on the ambitious and so kept the tonnage down to what they considered a proper figure.

But the war and the want have changed all that. The union has put all such considerations behind it. Now the men who do more a day are praised and admired. At some mines the double shift has become quite common. At other mines, like those of the Pennsylvania Coal Co., the men have till lately been working nine hours. So despite a 20 per cent. shortage of labor there is a 10 per cent. increase in production.

The nine-hour day may eventually be a solution of the needs of the hour. The subject has been taken up by the Conciliation Board, the operator members favoring it. The miners and other mine workers are still a little doubtful. Some men have questioned if more hours would mean more coal, but we are sure that when

the railroads get their proper stride the mine workers will decide that the longer hours will be justified. No one wants the mine worker to work overtime with frequency if concurrently with that overtime goes several days of idleness.

But better than the prospect of a nine-hour day has been the spirit of patriotism and sacrifice that has made that nine-hour day a possibility. As a result of the new spirit some miners and their laborers are mining eight car loads a day instead of four. The race for the garden gate is ended, and the sense of duty done is bringing to the heart of the mine worker—always a big-hearted fellow—all the joy that goes with performing a big service in a large way.

The average earnings of energetic miners in the anthracite region are now about \$200 a month. Many of them are making \$10 a day, or \$300 a month. The laborers earn about \$125 a month. A good day's work is worth good pay, and there is no reason why the mine worker should not get it.

Nova Scotia Gets Unfortunate Publicity

NOVA SCOTIA has some of the best mines on the American continent. We wish that the public knew no more about Nova Scotia than that fact. Unfortunately two bad explosions have recently made the province appear in the public prints. One occurred in the No. 12 colliery of the Dominion Coal Co., near Waterford, July 26 of last year, and the other is so recent, Jan. 23, that the casualty list is probably not yet completely determined.

The latter accident occurred at the Allan shaft, Stellarton in Pictou County, a long way from last year's disaster. There has been a fire in the workings and perhaps it was from this that the accident occurred. Strange to say the explosions, for there were two, were not severe. The first was but slightly felt at the surface. The second, which occurred ten minutes later, was more forcible but it did little damage to the shaft. A few minutes later the engineman was signaled to lower the cage to the 500-ft. landing. Some eight men waiting there entered the cage and came to the surface. These men had not felt the jar but they did notice the smoke, and this manifestation alarmed them and caused them to seek safety. Three or four men working in that same seam apparently did not try to escape and were lost.

The cage was not able to reach the 1200-ft. landing owing to obstructions 20 ft. above the bottom. Not until men with oxygen helmets descended were they able to begin the rescue work. Probably 85 men were lost in this explosion.

There is no intention to single out Nova Scotia for blame. Our record here, in the United States, is this year no cause for congratulation. It does seem that the reasonable and fair price for coal which we promised would reduce accidents has failed to do so. It has

merely made our coal production more feverish and less disciplined. We need to take seriously to heart the unsolved problems of mine management and to adopt with a feverishness equal to that expended in production all the advances in safety which the industry has evolved.

No nation has been more painstaking in its analysis of mine and other accidents than Great Britain. In that noble work her colonies have for many years emulated her. Let us trust that from the investigation of the accident of the Acadia Coal Co.'s mine at Stellarton some message may come that will enable the mines of the United States and Canada to be run more safely than in the past. The mines will certainly have to submit to more stringent regulation, for no one will be satisfied until the present death rate is reduced.

West Virginia Coal Production

EARL A. HENRY, chief of the Department of Mines of West Virginia, has called our attention to several discrepancies in the statistics contained in the Jan. 19 issue. On page 101 of that issue, under "West Virginia," it will be noticed that Mr. Henry gave the production for his state for the year ended June 30, 1917, as 79,806,652 gross tons, which was an increase of 194,354 gross tons over the production last year. On page 117, in the table showing coal production in the United States in 1917, the output of West Virginia is given as 79,806,652 net tons. The correct figures for West Virginia production for the period ended June 30, 1917, reduced to net tons, should be 89,383,450.

It will be obvious to the readers of *Coal Age* that when proper credit is given to West Virginia she will still retain her position of second place in the coal-producing states, as Illinois, to which we allotted that position, produced only 85,700,000 net tons, estimated, while the West Virginia figures are based on actual production. Instead of a decrease, therefore, West Virginia shows an increase of 217,676 net tons.

This is only another instance of the desirability of having all reports of production expressed in net (short) tons, and *Coal Age* again wishes to emphasize that fact. The inspectors of the different coal-mining states should exert their endeavors to bring about such a standardization.

A Proposed Advisory Coal Committee

REPRESENTATIVES of wholesale coal trade associations have presented recommendations to the United States Fuel Administrator, suggesting that he avail himself of the experience and advice of practical coal men at the present time of national stress. The movement is widely indorsed, especially by the trade end of the industry.

The plan as outlined calls for a committee of fifteen members, of which committee five members will be coal operators, five will be coal jobbers, two will be railroad men, two will represent labor, and one member will represent the United States Government. The plan further states that the five coal operators and the five coal jobbers shall each have sub-advisory committees from their respective districts, with a view to keeping them advised of the changing conditions in the various localities.

There is not the least doubt that there is a serious lack of experienced coal men on the staff of the Fuel Administrator. This has been the chief point of attack of those who have criticised Dr. Garfield. However, it is not plain just how such an advisory committee could work in harmony with the present organization of the Fuel Administration. The hand of the Government was shown clearly when it took away the authority of the Peabody committee, which had in its personnel some of the ablest coal-mining men in America. There appears to be a certain Federal distrust of the Nation's most successful business men. At any rate, the general policy has been to give authority for regulating an industry to men not at all versed in the technical or business details of that particular industry. There seems to be a fear that the men who know most about coal mining and railroading would not be able to overcome their personal prejudices and administer in an impartial manner.

Any move that will result in causing Dr. Garfield to call more of our experienced coal men into his service is indeed welcome. We do not anticipate that the present plan for an advisory committee of fifteen will meet with success. However, it is a proposal that aims to correct in some measure the great weakness of the Fuel Administrator's organization, and as such it is not without merit.

Miners' Convention Worth the Cost

THE mine workers' convention at Indianapolis cost the union men a pretty penny. There were 1752 delegates, and the transportation costs will be \$40,596.70, about a dime per member. Of course, these costs only represent a small part of what the international organization and 1772 locals will have to pay.

It is sometimes questionable whether these large conventions are profitable. But they certainly are necessary for the education of those attending them. Education is the very keystone of our civilization. Nothing better serves capital than education. The countries where workingmen are intelligent and informed are those in which capital makes the largest ultimate returns. No large and successful industry can ever be built on the work of ignorant employees.

The meetings of the mine workers undoubtedly liberalize their minds. The narrow bitterness of men who never travel is broadened by meeting men of larger viewpoint. They learn the size, the scope, the marvel of the great country in which they live. They learn about other people's difficulties, and they are broadened. The mine work thus gets its proper perspective. The men return prouder and yet at the same time more tolerant.

The education of the masses has too long been feared. Some of the masses today are beginning to denounce education because the men who have it lose their narrowness and see that even if the workman ruled the world he would find himself ruled in turn by economic laws and in harder straits than under the capitalistic régime. Why, therefore, should any one fear education? Its ultimate result is to teach the whole truth, and the world will always be best ruled when whole truths and not miserable half truths and prejudices form the basis of its laws.



Slate Must Not Ride on a Coal Ticket

A ton of coal is soon mined, but it is a long time getting to market. It doesn't take as much work to mine a ton of coal as it does to haul it to market and deliver it and stoke it and carry out the ashes.

The Miner Only STARTS the Coal on its Way

If he starts some rock, clay, slate or bone with it, that rubbish travels just as far, gives just as much work, but provides no heat. One hundred tons of slate takes just as many railroad cars and just as many locomotives to haul it as 100 tons of coal. It takes the same work to move it and to unload it and to get it into the bunkers, and just as much work or a little more to stoke it; and far more work to load it out as ashes which, in turn, may have to be carted several miles.

With such a shortage of locomotives and railroad cars as we now have, it is everybody's duty to keep slate from riding on a coal ticket. We cannot afford to have it taking up car space, bunker space and grate space.

**Don't Load Out Dirt:
Uncle Sam Pays For and Wants Clean Coal**

LEGAL DEPARTMENT

INJURY IN HANDLING CARS IN MINES—In affirming judgment in favor of a miner who was injured while temporarily assigned to the work of repairing a track in a mine, work in which he was somewhat experienced, the accident being caused by a collision of cars backed into a derailed car near which he was working, it is held that the operator is liable on the ground of negligence of the employee's foreman in assigning him to the work without placing signals to protect him, or without warning the employees who were operating the cars of the danger of injuring him. Under the circumstances, the injured man cannot be deemed to have assumed the risk of the accident. (Virginia Supreme Court of Appeals, Clinchfield Coal Corporation vs. Ray, 93 Southeastern Reporter, 601.)

PROXIMATE CAUSE OF MINER'S DEATH—Where a coal miner was severely burned by an explosion of mine gas, for which his employer was responsible, the fact that the miner contracted hypostatic pneumonia, resulting in death and caused by the burns and the position in which he was compelled to lie, cannot be said to be so remote from the accident as to exonerate the employer from liability for damages for the death. Where two concurring causes produce an injury, which would not have resulted in the absence of either, a person producing either cause is liable for the consequent injury. (Arkansas Supreme Court, Sterling Anthracite Coal Co. vs. Strobe, 197 Southwestern Reporter, 858.)

WHO MAY NOT SUE AS FOR TRESPASS IN REMOVING COAL IN PLACE?—Plaintiff was not entitled to maintain an action for damages for removal of coal from land of which he had neither actual nor constructive possession, the surface being in the possession of third parties who claimed title and under whose lease defendant removed the underlying coal. (Pennsylvania Supreme Court, Griffin vs. Delaware & Hudson Co., 101 Atlantic Reporter, 750.)

WHAT CONSTITUTES "MACHINERY AND APPARATUS" ON COAL DOCK?—**RIGHTS TO INTEREST ON CLAIM**—A railroad company leased to a coal company a coal dock at Superior, Wis., under agreement that on expiration of the lease the railroad company would buy at a fair valuation all the "machinery and apparatus" installed on the dock and used by the coal company with the lessor's consent. Held that the provision extended to all appliances which the lessee with the consent of the lessor placed on the dock, including trestles and cable system, wooden understructure of the same, the tracks and understructure of hoists, anthracite coal pockets, and other permanent structures. Under the general rule that interest is not recoverable on a litigated claim until the amount of the claim has become ascertained by judgment, the lessee was not entitled to interest on the value of the property left on the dock between the termination of the lease and an adjudication in court as to the amount of such value, the parties having failed to agree on the amount. (United States Circuit Court of Appeals, Eighth Circuit; Great Northern Railway Co. vs. Philadelphia & Reading Coal and Iron Co.; 242 Federal Reporter, 799.)

VIRGINIA MINING ACT APPLIED—The Virginia Mining Act contains the provision: "On all haulways where hauling is done by machinery of any kind, the mine foreman shall provide a proper system of signals and for the carrying of a conspicuous light on the front, and a light or flag on the rear, of every trip or train of cars when in motion, provided that this shall not apply to trips being hauled by gathering motors or mule teams when operating on other than main headings, and when hoisting or lowering men occurs before daylight in the morning or at evenings after darkness." In affirming judgment in favor of a miner who

was killed in defendant's coal mine, the United States Circuit Court of Appeals, Fourth Circuit, holds that this statute applies where loaded cars are being pushed by a motor to the foot of an incline to be there connected with a hoist chain for movement to the tippie. (Johnson vs. Pocahontas Consolidated Collieries Co., 244 Federal Reporter, 368.) It is further decided that a mine inspector's erroneous interpretation of the statute as not requiring a light on moving cars at a particular point in a mine where the accident occurred, even though communicated to the operator, cannot relieve the latter from liability for actual damages sustained on account of the accident. It was also held that the jury was warranted in finding that the accident in question was directly due to failure to have a light displayed on the front of the cars which struck decedent while he was waiting on the track for other cars to pass on an adjoining track; and that decedent's act in going into the drift mouth of the mine to a point where it intersected, near the tippie, the entrance from the tippie, there to take a car to ride into the mine, did not constitute a traveling on foot to work on a motor road, in violation of the Virginia Mining Act. Another point held in the case is that decedent was not necessarily guilty of contributory negligence in standing on the track to let the cars on the other track pass, whereas he might have stood in a clear space of 5½ ft. between the tracks, because failure to have the cars which struck him lighted concealed their approach from him. Nor is recovery to be denied because decedent may have failed to listen for approaching cars, it appearing that the noise of the cars on the other track drowned the sound of those that struck him.

WHAT A MINER IMPLIEDLY REPRESENTS TO HIS EMPLOYER—When an adult man applies for employment in a mine, a mine operator is entitled to assume that he is reasonably well qualified by experience for the work he seeks, and, unless he discloses facts to the contrary, the employer is under no legal duty to instruct him against dangers commonly understood by miners engaged in the particular line of work. So where plaintiff had worked in mines for more than two years, observing and taking part in drilling and blasting with powder, the defendant in employing him was entitled to assume that he understood the necessity for careful examination of places where holes had been drilled and charged, before attempting to pick rock down after blasting, in order that any missed hole might be discovered. And since he did not apprise the defendant of any inexperience in such matters the company was not negligent in failing to provide a system of rules or instructions to safeguard him. (Utah Supreme Court, Olsen vs. Triangle Mining Co., 813.)

CARE OF ELECTRIC WIRES IN MINES—It is the duty of a mine operator to cause proper inspections of an electric feed wire strung along one side of an entry on the rib near the roof to be made with reasonable frequency to assure miners against the danger of coming in contact with the wire. Omission of an operator to use ordinary care to make a fallen wire reasonably safe, after it was known, or by the exercise of ordinary care might have been known, that the wire had fallen into a dangerous position, constituted actionable negligence, rendering the operator liable for fatal injuries sustained by a miner through coming in contact with the wire under circumstances which did not charge the man with contributory negligence. The burden to show contributory negligence rested upon the operator when sued, unless the plaintiff's evidence affirmatively established it. (Virginia Supreme Court of Appeals, Virginia Iron, Coal and Coke Co. vs. Prophet's Administrator, 93 Southeastern Reporter, 590.)

DISCUSSION BY READERS

Examination of a Mine

Letter No. 2—It appears from the reading of *Letter No. 1*, *Coal Age*, Dec. 22, p. 1069, that W. Dickinson claims the answer given by the editor to the question of a fireboss, regarding the manner in which he should examine a mine, is not complete. Mr. Dickinson then proceeds to explain his method of performing the duties of a fireboss in a West Virginia mine.

While I am not familiar with the requirements of the West Virginia mining law in this respect, I want to say that the answer given in *Coal Age* to this question explains exactly the procedure in Colorado when a fireboss is making his morning examination of a mine. Anything to the contrary would not be in compliance with the Colorado mining laws. I am inclined to believe, however, that the editor of *Coal Age* is fully familiar with the requirements in West Virginia and that these do not differ materially from those in Colorado.

FIREBOSSING IN COLORADO MINES

When a fireboss makes an examination of a mine, in Colorado, his duties as a fireboss end when he has returned to the bottom of the shaft, entered his report in the book kept for that purpose, attached his signature, and reported to the mine foreman that the mine is safe for work, except for any dangers he may have noted in his report.

In doing this, the fireboss turns the mine over to the foreman who has full charge of the underground workings and the men employed therein. He then goes to his breakfast and, upon his return to the mine, seeks out the foreman and receives from him his instructions for the day.

HOW PRACTICE DIFFERS FROM THAT IN OTHER STATES

Where practice in Colorado appears to differ from that in West Virginia, as explained by Mr. Dickinson, is in the work done by the fireboss when he returns to the mine after breakfast. Mr. Dickinson states that the fireboss then "makes a more careful examination of the air-courses and working places in his district, giving such instructions to the men as may be needed," which will complete his duties for the day.

In Colorado it is the duty of the fireboss, on returning from breakfast, to obey the instructions of the foreman and perform any work that the latter sees fit to give him. It may be the building of a concrete stopping, cleaning up roof falls or other similar work.

In the absence of any assistance, and the mine foreman being too busy to do the work himself, as required by Sec. 76 of the Colorado mining laws, he may order the fireboss to make a second examination of the mine, which must be done during working hours.

I recall an incident where a fireboss refused to perform certain work ordered by the mine foreman, claiming that he was not subject to the orders of the foreman. His refusal led to his prompt discharge from

the company. In court the case was decided against the fireboss, and he has not been able to secure a similar position since.

It is not infrequent that firebosses consider their work in the examination of a mine continues for eight hours, and that they are independent of the mine foreman; but this is not the case in Colorado. During my spare hours, I have devoted much time to the study of the mining laws of this state, and I want to say that when an assistant foreman, fireboss, shotfirer or other employee disregards the orders of the mine foreman there is trouble ahead. Should anything go wrong the foreman alone is responsible.

Where the foreman has no particular work for the fireboss to do on his return to the mine, after breakfast, he can employ himself by extending brattices in the working places, not for the purpose of removing gas only, but to provide a better circulation of air and keep the temperature down, so that the men will not be as exhausted at the close of the shift as when they are required to work in hot and close places.

Let all firebosses remember that we are after the Grim Reaper, who so unmercifully takes away many of our good miners. Any suggestion that will sidetrack the Reaper and make his work less effective in the mine is gladly welcome. I believe in a thorough and rigid examination of the mine by a fireboss. He should see to it that all dangers are promptly removed and everything done to make the mine safer and healthier for work.

Where the working places are kept well ventilated, the miners can do more and better work. During working hours, the mine foreman is responsible for the production and output of coal, and it is a good plan to provide safety inspectors to inspect the mine daily.

Farr, Colo.

ROBERT A. MARSHALL.

The Mine Gatehouse

Letter No. 2—The suggestion of a gatehouse at the mine entrance, made in the Foreword of Dec. 8, appeals to me chiefly as affording a means of checking the men passing in and out of the mine. Many of the coal-mining states, I believe, have a law requiring the use of a suitable checking system. In my opinion, where there are not too many openings that would afford opportunity for men to enter and leave the mine without it being known, the idea of a gatehouse seems wholly practicable.

It goes without saying that a mine of any size that has no system of checking the men that enter and leave the workings is a back number today. Where no other plan is feasible the mine regulations should insist on each man registering his number on a bulletin board when he enters the mine for work. This may require him to take a little longer route than he would otherwise, but the advantage gained justifies the extra effort.

Every operator should consider it his duty to assume a certain responsibility in regard to the number of

men at work in the mine at any time and be able to tell who they are when the information is desired. In order to do this, however, a perfect checking system must be arranged, and the gatehouse idea seems to offer the surest and most reliable method.

At mines where everyone is supposed to check himself in and out of the mine great uncertainty exists, as there are always those who forget to hang their checks on the board in the morning or take them off at night. This is true even where radical measures are adopted to cure men of their forgetfulness.

A thorough checking system that is reliable in every respect will go far toward driving the truth home to the heart of every mine worker that the country needs him at work in his place every day. The mine worker who lays off, except for sickness or other just cause, is as much a recreant to his patriotic obligations as the soldier who runs from the firing line or deserts the trenches. I believe that the gatehouse is an unfailing means of forcing this truth home. W. H. NOONE.

Thomas, W. Va.

Mutual Capitalizing

Letter No. 1—Allow me to commend the thought expressed in the Foreword entitled "Mutual Capitalizing," which appeared in *Coal Age*, Jan. 5, 1918. It is not without some experience in this particular field of endeavor that I am led to conclude you have struck the keynote to success in securing the highest efficiency in mine labor and a maximum production of coal, both of which are unquestionably supreme factors requisite to placing mining men, employers and employees in the first rank of loyal Americans, taking good care of the boys who must go "over the top."

It has been well said that the best kind of capitalizing, at the present time, is the mutual kind. And certainly one who has given the situation any consideration whatever will admit that profits and earnings are no longer the first in importance, but coal for the country's needs. Although hesitating to discuss this subject personally, the situation seems to demand that natural diffidence be cast aside and we all do our bit to assist the general understanding.

SUCCESS IN CAMPAIGNING AMONG MINERS

Mutual capitalization of coal-mining interests forms the corner stone to national prosperity—the strong shield of the nation's safety. To obtain this in the most effective form there can be no distinction of master and men. Where responsibility is uneven, the burden naturally rests with the so-called masters who have the advantage of their position and education, which gives them a clearer insight into the difficulties now confronting us all.

How may a realization of this truth be best brought home to everyone, in order that results may follow equal to the emergency and develop the highest type of loyalty? To my mind this question is best answered by an explanation of several campaigns which have recently been conducted in this and other mining districts, each embracing different lines of endeavor and all converging to the same end.

The first was a Y. M. C. A. war-fund campaign. Raising money for patriotic purposes is not a novel under-

taking for this organization. The proposition, in this instance, was so extensive in its application that it justified an appeal to every class of citizens. As we happen to be located in a mining community there were few workers or employers who were not solicited. The result was gratifying, indeed, but it was felt that even more could have been accomplished.

The first Liberty Loan campaign was next begun. At all mines in this region the work was pushed with commendable zeal and, as the world knows, the desired amount was far oversubscribed. It was significant, however, that in withdrawing the excess subscriptions the Government limited the refunds to purchasers of \$20,000 worth of bonds and upward.

When it came to launching the second Liberty Loan subscription it was evident to the mining managers who had taken direct interest in this work (and be it said they were most efficient and commendably active) that something had to be done to break down the barrier that unmistakably existed between them and the so-called foreign class of workers.

The recognition of this fact supplied the first step in advancing mutualization, and it brought actively into the field the assistance of the officials of the United Mine Workers, who were eager to do their bit. In this district a number of meetings were held where the coal company and the union officials sat on the same platform with the mine workers, and results were far more successful than in either of the previous campaigns.

SPECIAL EFFORTS MADE TO INTEREST FOREIGNERS

This was followed by another war-fund campaign conducted by the Knights of Columbus, which was similar to that of the Y. M. C. A. campaign. A change of method was again adopted, in that the managers of this campaign took another course to educate the foreign element, whom they knew were just as loyal and equally anxious as their fellows to do their share if properly approached. The pastors of the various churches were first called upon and their active coöperation was secured without difficulty. The success of this last campaign was most astonishing, since it included in the list of subscribers 85 per cent. of the foreign population. Other campaigns followed, such as the Red Cross and kindred funds, each of which found the work greatly facilitated by what had gone before.

I have detailed this somewhat in order to make clear the point that "mutual capitalization" can be done with complete success but only by an active campaign, wherein the mine owners and mine officials who have been most active in formulating plans for patriotic work will forget their titles, divorce themselves from the professor's chair and join in an out-and-out mutualizing campaign.

It is idle to say that the spirit of equality prevails, or that those who know best how to work have been willing to do missionary duty of this sort. They have not; and until they come to a definite decision in this respect, and go out and solicit aid from those who have real influence with their employees, we shall continue to have "Plough Mondays," Little Christmas, Ducking Days, protracted paydays, big heads and a reduced coal production.

The officers of the United Mine Workers have shown their sincerity in endeavoring to increase the produc-

tion of coal. They have exhorted their followers to stay on the job; they have addressed meetings; instructed local leaders to be active and persevering; and in the larger conferences with Conciliation Boards, Government representatives, fuel administrators and operators' committees have given every assurance of their securing a maximum output at the mines.

Let me ask, in closing, Why should this work be left exclusively to these men? Are the mine owners and mine officials willing to admit the intellectual superiority of the union leaders? It would appear so, and yet it is safe to say that a new and improved method can be evolved if those brilliant men who officer the coal companies of the anthracite districts will take an active interest and give a helping hand. It is evident that there are many ways in which this mutualizing can be brought about; but as an individual I would hesitate to offer any suggestion beyond recommending the most serious consideration of the proposition, on the part of all mine officials. They are urged to take this matter up seriously, and open negotiations with the end in view of improving the intimacy of district, local and mine officials, which will eventually bring Yonko, Antonio and Koziusko into the field of educational endeavor for mutual capitalizing.

W. E. JOYCE.

Sandy Run, Penn.

Relative Size of Intake and Return Airways

Letter No. 3—Referring to the discussion in regard to the relative sectional areas of intake and return airways, I feel somewhat like F. E. Schroyer, *Coal Age*, Jan. 5, p. 32, who prefers to make the haulage road the larger, regardless of whether it is the intake or the return airway of the mine.

Theory has always answered this question by referring to the increased volume of the return air current, which is due to its generally higher temperature and the presence of gases generated in the mine. The correctness of this assumption cannot be denied, but there are practical reasons that seem to overbalance these conditions and require that the intake airway, when used as a haulage road, should have a larger sectional area than that required for the return current.

This question, to my mind, is a very important one, especially at this time when so many new mines are being opened around the country. These are often in charge of young men of limited experience in mining. I would like to see the matter thoroughly discussed by older and more experienced men than myself, as there is weight of argument on both sides of the question.

In respect to this matter I am inclined to reason about as follows: Assuming that the main haulage road is the main intake airway, in a mine where motor haulage is in use, let it be supposed that a 20-ton motor is employed and hauls trips of, say 25 cars in and out of the mine, or there may be two of these motors in use. There is usually one trip of cars standing on the siding or at the shaft or slope bottom, while another trip is moving on the airways.

We may assume that the clear sectional area of the airway is 70 sq.ft., of which the motor and trip take up about 21 sq.ft., leaving a net area, for the passage of air, of $70 - 21 = 49$ sq.ft. I will assume that the

original velocity of the air passing into the mine is 900 ft. per min., which would give $900 \times 70 = 63,000$ cu.ft. of air in circulation.

Now, my idea is that a motor trip standing or moving in an airway blocks the air very much as a box regulator, which increases the velocity of the air passing, while it decreases the sectional area. Then, let me assume that the velocity of the air passing a trip of cars is increased to, say 1000 ft. per min., the effect of which is to reduce the quantity of air in circulation to $1000 \times 49 = 49,000$ cu.ft. per min. On this basis, the loss in circulation would be $63,000 - 49,000 = 14,000$ cu.ft., or over 22 per cent.

In my experience in charge of mines, I have observed a similar decrease in the circulation of air on main haulage roads when a driver was coming against the air. If that is true in the case of a driver, it may be supposed that a fast-moving motor trip will have an even greater effect. The question is, how far do these facts hold in affecting the general circulation of air, in a mine where the haulage is performed on the intake airway?

AN INTERESTED FOREMAN.

McIntyre, Penn.

[This is an excellent question for discussion, and there is no doubt that there are many important points to be brought out and remembered, affecting the problem. Indeed, no absolute rule can be given that will fit all cases. The best that can be done is to draw attention to the so-called theory of the increased volume of the return current, demanding an increased sectional area of the return airway; and the practical requirements of all main haulage roads, calling for a safe clearance at the side of the track, when considering the resistance offered by moving trips of cars.

In general it is needless to discriminate between the two cases, whether the haulage is performed on the intake or the return airway of a mine, since the empty and loaded trips pass in different directions going in and out of the mine; and while their movement resists the flow of the air when going in one direction, it assists the air movement when going in the opposite direction. These two conditions would almost balance each other, in respect to the general circulation in a mine, except for the fact that the loaded trips create a possibly greater resistance than that produced by the empty trips, which would be the case when haulage is performed on the intake airway. This difference, however, has a comparatively slight effect on the general circulation.

AN ERRONEOUS ASSUMPTION

The suggestion is offered that a motor trip standing or moving in an airway acts very much as a box regulator, increasing the velocity of the air passing, while decreasing the area of passage. It is a mistake, however, to estimate this increased velocity as being only 1000 ft. per min., in the case assumed by our correspondent, the original velocity being 900 ft. per min. This is pure assumption and not in keeping with the actual facts.

The question of how much the general circulation of air is decreased by a trip of cars moving against the air current can only be correctly estimated in a manner resembling that of a movable piston in a cylinder having

a larger sectional area than the area of the piston. The effect is to set up a local dynamic equilibrium between the energy of the air current, which is opposed and equal to the energy of the rush of the moving cars transmitted to the air about it.

That would be a difficult question to solve satisfactorily; but, as previously stated, the effect on the general circulation of the mine, owing to the movement of the trips in opposite directions, is so slight that it may be practically ignored. In other words the actual effect, as observed by the anemometer readings mentioned, is only temporary and counterbalanced when the conditions are reversed by the trip running in the opposite direction.

This resolves the question into one of increased volume of the return air-current, requiring an increased area of that airway, without regard to whether it is the haulway or not. The question of providing a safe clearance on the haulway is another consideration aside from that of ventilation.—Editor.]

Miners and the War

Letter No. 6—I have been greatly interested in the letters relating to the attitude of miners in respect to the war. In a few instances the miner has been charged with a lack of patriotism. Some writers seem to imply that the miner is getting rich quick, owing to the increase in wages granted him.

Since like increases have been granted working men in all trades and industries, the miner is not alone in this respect. The increase is a recognition of the character of the times and has become a seeming necessity, because of the very large increase in the cost of living. Wage increases are, also, the worker's just share of the largely increased profits that have come through the amazing expenditure of money in the present crisis.

The trend of affairs in the industries of the country causes the thoughtful man to stop and consider what is to be the outcome. The process of increasing prices and then increasing wages to meet them, it is certain, cannot go on forever, and retrenchment will surely come when the difficulty will be to reduce wages without causing a serious disturbance in the labor world. There is such a thing as killing "the goose that lays the golden egg," and we may yet see the application of this old adage.

TRUE ATTITUDE OF AMERICAN LABOR

The time has come when labor, in this country, can and should meet all conditions with a thoughtfulness that is unknown in other countries. American labor is possessed of a generally high-average mentality, and this, together with the fact that the true American is animated at the present time by a real spirit of patriotism, will greatly assist in avoiding trouble when affairs take on a different aspect and there is the necessity for curtailment.

In this connection mention has been made of the injustice that is done to that large class of clerks and other salaried men, many of whom are still working for the same salaries that they have been receiving for years past, notwithstanding the fact that they have to stand the same high cost of living as other workers whose wages have been increased.

This is something for all employers to think about. I believe that the average employer does not desire to

make a fortune at the expense of a few of his employees. He desires to do the fair thing by all of his men; but these inequalities are largely the result of oversight or thoughtlessness on his part.

I recall reading in *Coal Age* a short time ago an excellent article by an anthracite superintendent [Dec. 15, p. 1008]. The article ought to be read by all superintendents, who should consider carefully the suggestions made. No one who is familiar with the situation here in the anthracite field will imagine for a moment that a man holding a position as superintendent of a large colliery would make these suggestions, unless he felt that they were of the greatest importance to the coal industry. Nor will anyone familiar with conditions existing in and around the anthracite mines fail to understand what that superintendent said about national prohibition bringing a large increase in the production of coal and greatly lessening mine accidents.

Somewhere I have read the statement that 85 per cent. of the men working in and around these mines are given to overdrink on payday and are unfit for work for days afterward. I cannot let this statement go unchallenged, as it is untrue. We all know perfectly well that there are men in every colliery and mining camp who drink too much and are unfitted for work for several days following payday. It is true, also, that the total number of days lost to coal production in a single colliery or field is formidable, but it does not reach the percentage indicated by my former statement.

PROBLEM FOR MINE OFFICIALS

This waste of man-power and production is a matter for superintendents and foremen of mines to consider and take steps to eliminate. It is idle to talk about sacrificing and saving coal and then overlook the weightier matter that causes such a great loss in coal production as the presence of the saloon in mining camps. Think of schools, in the heart of the anthracite coal fields, being closed down to save fuel, depriving the miners' children of the chance of an education, while their fathers are grouped around a hot stove in a bar-room, making themselves unfit for work and proving a real loss to the production of coal.

By ridding the mining camps of the saloons, hundreds of thousands of dollars would be saved to the company. The saloon is the last thing the miner sees in the morning when going to work and the first thing he strikes on his return from the mine. There ought to be ways and means of approaching this question through the courts, since it is a matter that should be subject to regulation by the Government in the efforts made for conservation and increased production.

It is my belief that most, if not all, miners are true Americans, in this war. What is needed is leaders, whether in the form of company officials or the officers of their union. In order to enable the miner to do his part all must unite in a war-saving plan, with the details of which every mine worker should be made familiar. Nothing can do this more effectively than for officers and men alike to cooperate in the work, shoulder to shoulder, for the same great end.

The public should cast aside the idea that the miner is thriftless and extravagant. Readers of the daily press should not be misled by the foolish tales that appear, from time to time, in its columns. Only a

few days ago the *New York American* printed an item stating that the head of a large coal firm, owning mines in and around Wilkes-Barre, drifted into his own company store, bought a 5c. cigar and started to smoke, when he was accosted by a miner with the words: "Stranger, throw away that butt and smoke this real cigar. It's a 40-center." Another item stated that a Philadelphia florist, who had filled several out-of-town orders for chrysanthemums, found, on investigation, that they were going to miners' homes. Such talk, as it relates to the average miner, is mere twaddle.

Regarding the patriotism of miners, let me say that, as an American miner, my patriotic feelings have been sorely strained by the conditions at the mines during the past two weeks. My output in that time fell from a possible 250 to only 100 tons of coal. I have been to the mine three days in succession without being able to work a shift; and yet during all that time the mine worked 8 hours each day.

A MINER.

Kingston, Penn.

Blacklisting To Prevent Accidents

Letter No. 7—I have been reading with much interest the arguments advanced by different writers for and against the blacklisting of careless miners as a means of preventing accidents, but not a word is said in favor of blacklisting a careless fireboss, assistant mine foreman, foreman or superintendent. Are not some of these men as careless, at times, as the average miner? If so, why not blacklist them as well as the miner? I know we have some mine officials who are equally as careless as the miner they employ.

It does not seem to me a fair proposition, however, to blacklist men for an infringement of the mining law or for being careless and I believe it would be illegal. No one ever talks of blacklisting the man who violates other laws of the state. Why, then, blacklist him for violating the mining laws? If a man commits a crime he is arrested and punished for his misdeeds according to the law.

What right would a mine foreman or other mine official have to discharge a man and blacklist him for carelessness or for breaking the rules of the company or the laws of the state? Are mine officials constituted judge and jury? The man found guilty should be reported to the mine inspector who is the proper authority in this case, and let him punish the offender according to law.

BLACKLISTING WRONG IN PRINCIPLE

If the blacklisting of men was permitted and put into force it would be a vicious and dangerous practice as it would give one man, and perhaps an unscrupulous one, power to injure another without giving the latter any opportunity to defend himself.

One writer states, *Coal Age*, Jan. 12, p. 74, "Lack of discipline on the part of mine officials is responsible for much carelessness on the part of miners." But, lack of discipline on the part of the man having authority to enforce discipline is nothing less than carelessness, and he is therefore responsible for the act of the miner, and is the one, if any, to be blacklisted. But I say, blacklist no one, it is contrary to all the principles of law and justice. Punish a man for his misdeeds and

then send him back to his work and he will seldom give further trouble.

No one would think of blacklisting a soldier for carelessness or for some breach of discipline; he is court-martialed and punished, according to the seriousness of his offence, and is made a better soldier after he has been taught a lesson in discipline. In the same manner, every man should have a chance to defend himself before the legal authorities for any careless act that he has committed in or around the mine.

All men working in and around mines are working under the state mining law and are answerable to the state authorities for any violation of that law and that should be the only way to punish them. I am not, in any manner, trying to defend the careless miner or mine official but am objecting to the method that has been suggested for punishing them by blacklisting.

Uniontown, Penn.

JUSTICE.

Letter No. 8—Referring to the suggestion of blacklisting men found guilty of acts of carelessness or disobedience to orders, allow me to say that I hope and trust the day is not far distant when the name or thought of "blacklist" will be forgotten and banished forever. In my opinion it is not worthy of any consideration in the minds of thoughtful men.

No one can deny that there are many careless men employed in and about coal mines and that their acts may be the cause of serious accidents. Observation and experience, however, force one to the conclusion that more accidents occur in mines as the result of the failure of mine officials to install the necessary appliances or perform the work required to make the mine safe than are caused by the neglect or carelessness of miners. From the general manager down to the assistant foreman, the disposition of mine officials in most mines is to make every requirement of safety subordinate to reducing the tonnage-cost for the mine.

THE DAILY PRESS ON MINE ACCIDENTS

A miner may be injured or killed by a fall of slate, and the accident is heralded in the newspapers as the result of the poor miner's ignorance or recklessness. It is even made to appear, to the eyes of the public, as approaching a case of suicide. But, were the real facts known, in many cases the blame for the accident would be laid at the door of the management for its failure to supply the necessary timber to make the working places safe.

Where these facts are true, as they are in many instances, the method of blacklisting men for accidents would generally be unjust; many innocent men would suffer for what was not primarily their fault. Where safety is the first consideration in the mind of a management, there are always fewer accidents recorded against the mine.

It is the tendency of many mine officials to put off for tomorrow what should be done today. This is the cause of many mine accidents that leave children fatherless and deprive wives and mothers of their support. Untold loss and sorrow are the results of these accidents, many of which are avoidable. There is loss to the company by whom the man was employed and sorrow to his family. Let the blame be placed where it belongs.

Nanticoke, Penn.

W. A. BARRETT.

INQUIRIES OF GENERAL INTEREST

Treatment of Impure Feed Water

At present much time is being lost in the operation of mines in this district, by reason of the scarcity of water to feed the boilers. Owing to the continued severity of the weather, the reservoirs and other sources of water supply at the mines have failed, many of them being almost frozen solid.

The mines, at the same time, appear to be making about the usual amount of water, which drains into the workings and must be removed by pumping. In its passage through the strata, this water has often absorbed so many impurities that it is unfit for use in the boilers, and must be allowed to run to waste, unless some practicable means can be found for removing the impurities and making the water fit for service.

Any information that *Coal Age* or its readers can give in regard to the character of the impurities that are most harmful in boiler practice and means for their removal, will be of great interest to many readers.

Linton, Ind.

W. H. LUXTON.

The scarcity of water supply at the mines is quite general throughout the country, at this time, and more than one mine has faced the alternative of using the impure water discharged from the pumps, or closing down till a supply of water could be obtained suitable for use in the boilers.

The impurities contained in mine water may be mineral salts, as carbonates or sulphates of lime, magnesia, iron, sodium or potassium, dissolved from the rock formations and held in solution by the water as it drains into the mine; or sediment held in suspension, as organic matter, mud, or other foreign substance washed from the strata.

In the boiler, these impurities do not escape with the steam but remain in solid form and incrust the inner surface of the boiler and the tubes with a scale of varying hardness depending on the character of the ingredients. The formation of scale in a boiler not only reduces its capacity for generating steam, but retards the transmission of heat from the furnace to the water and causes the overheating of the boiler plates and endangers the boiler from the bulging of the plates or the forming of blisters.

The treatment of impure boiler feed waters may be classified under three heads: (1) Chemical; (2) thermal; (3) mechanical.

1. The presence of mineral salts or free acid in feed water requires chemical treatment to effect the precipitation of the salt or the neutralization of the free acid. This is accomplished by means of so-called "boiler compounds." No boiler compound, of which there are many on the market, however, is of general application, and the only safe rule is to have a competent chemist analyze the water and recommend the proper treatment. Without such analysis and competent advice, the use of a

boiler compound recommended as having proved efficacious in one or more instances, may do more harm than good.

Many boiler compounds are designed to form, by chemical reaction, a new salt that will not make as hard a scale but one that is readily removed, either by blowing off the boiler at intervals, or by the use of scrapers when the boiler is out of use. Other compounds contain substances that coat the crystalline precipitate with a film that prevents their cohering and forming a solid scale. A small quantity of kerosene added to an impure feed water will often have the same effect in preventing the consolidation of the carbonates of lime and magnesia precipitated by the heating of the water, but the use of oil, except in very small quantity, may coat the boiler with a thin film that tends to decrease its steaming capacity slightly.

2. The carbonates of lime and magnesia are held in solution in water containing an excess of carbonic acid. When the water is heated to boiling, the free acid is expelled and these salts are precipitated. This makes it possible to purify such waters, by heating them in large tanks or feed-water heaters, and then allowing time for the precipitated salts to settle before pumping the water into the boiler. This process is known as the "thermal treatment" of feed water.

3. When a feed water contains sediment, as mud, sand or organic matter, this can often be separated by running the water first into large settling tanks and allowing sufficient time for the sediment to settle before using the water. The heavier matter, sand and mud, can generally be separated in this manner, but light organic matter will often require filtering the water through a specially prepared filtering tank or basin.

It has at times been found advantageous to install a purifying plant, which combines any or all of these means and processes, where it is necessary to use large quantities of an impure water. The installation and operation of such a plant will often prove a large saving in expense, which would result in attempting to operate the boilers without first purifying the feed water.

Impure feed waters act in three ways to cause trouble in boiler practice, according to the character of the impurities they contain. (1) Such water may simply incrust the boiler by forming scale of varying hardness and which must be removed from time to time. (2) The water may be corrosive in its action and attack and eat away the metal and thus weaken the boiler. (3) The impurity in the water may be such as to cause priming, by which water would be carried over from the boiler into the cylinder of the engine.

Feed water containing carbonates of lime and magnesia or iron are prone to form scale; and a feed water containing organic matter, chloride or sulphate of magnesia and some free acid, will corrode the boiler; while water containing sodium carbonate or other alkalies and organic matter induce priming.

EXAMINATION QUESTIONS

Indiana Mine-Bosses' Examination, Vincennes, Jan. 17, 1918

(Selected Questions)

Ques.—What factors of safety should be kept and maintained at the surface landing where miners are being lowered or hoisted out of mines?

Ans.—The means of safety, or safety appliances, that should be kept at the surface landing of a shaft or slope are the following: (1) Safety blocks to prevent cars running into the shaft or slope. These blocks should be arranged automatically so that when released they will fall back into position to stop cars from running past them. (2) A derailing switch, which should also be automatic and set for the sidetrack, except when in use to take cars into the mine. It is a good plan to have the grade rise slightly toward the shaft, so as to prevent surface drainage finding its way into the mine. (3) The head of a shaft should be protected by automatic safety gates so arranged as to be operated by the cage, rising with the cage as it reaches the surface and falling again as it starts to descend in the shaft. (4) There should be speaking tubes or other means of communication between the head of the shaft and the engine room and the shaft bottom.

Ques.—(a) What effect does a misplaced shot have in the presence of firedamp? (b) In the presence of coal dust?

Ans.—(a) A misplaced shot when fired may produce a considerable quantity of flame, which is projected from the hole as the result of the shot blowing the tamping from the hole or an overcharge of powder crushing the coal into fine fragments. In either case, the projected flame would ignite any accumulation of firedamp in the place and a more or less local explosion of gas would occur.

(b) Where a shot is misplaced or overcharged and a blownout or windy shot occurs, in the presence of an accumulation of coal dust, the latter is thrown into the air and ignited by the flame of the shot, producing a local dust explosion that may or may not be propagated throughout the mine, depending wholly on conditions in the workings.

Ques.—What methods would you adopt to protect surplus powder?

Ans.—No surplus powder should be kept on hand in the mine. Safety requires that the miner should take into the mine only sufficient powder for the day's supply, and this should be kept by itself in a box that is securely locked. Strict regulations should be enforced, in this respect, throughout the mine.

Ques.—What instructions would you give and what precautions would you take, as mine boss, to prevent accidents through shotfiring?

Ans.—Shotfirers should be instructed not to start to fire shots until all persons have left the mine, except themselves. They should begin firing on the end of the

air and proceed in regular order, advancing against the air current. Each shotfirer should only fire the shots in his own section of the mine. Two shotfirers should not work together in the same section. Shotfirers should fire no shots that, in their judgment, appear to be unsafe. When firing shots in any place, ample time should be given for the air current to clear away the smoke and gases that may have backed into the place from the shots previously fired in an adjoining place.

For the protection of shotfirers, a mine boss should employ only competent men for that work and should give them authority to refuse to fire any shots that, in their judgment, are unsafe. Greater safety is insured where the shotfirers are required to examine, charge, tamp and fire all holes drilled by the miner and which they consider safe. The mine boss should divide the mine into sections of such size that the firebosses can complete their work in the prescribed time, without being required to do the work too rapidly. As far as practicable, permissible powders should be used in blasting and strict regulations should be made and enforced governing the entire work.

Ques.—(a) What per cent. of air is oxygen? (b) What is the difference between a dangerous atmosphere and a fatal atmosphere?

Ans.—(a) Oxygen forms 20.9 per cent. of air, by volume; and 23 per cent., by weight. Thus, 1000 cu.ft. of pure dry air contains 209 cu.ft. of oxygen; or, 100 lb. of pure air contains 23 lb. of oxygen.

(b) A dangerous atmosphere is one that approaches the danger limit, owing to its being charged with gas or dust, to such an extent that ignition is liable to occur in the ordinary operation of the mine, either from blasting, the sparking of electric wires, blowing out of fuses or the use of open lights, or a defective safety lamp. An atmosphere may become dangerous by the presence of poisonous or irrespirable gases, or an insufficient amount of oxygen.

A fatal atmosphere is one that would cause death if breathed in sufficient quantity for a sufficient length of time. An atmosphere may be considered as fatal when it contains a sufficient percentage of explosive gas to cause a fatal accident.

Ques.—How many tons of coal in a 5-acre block of coal 6 ft. in thickness, assuming there are 27 cu.ft. in 1 ton, and allowing 20 per cent. off for waste?

Ans.—The cubic contents of this seam is $5(6 \times 43,560) = 1,306,800$ cu.ft. Then, allowing 20 per cent. off for waste leaves 1,045,440 cu.ft. Finally, allowing 27 cu.ft. per ton gives a total tonnage in this tract of $1,045,440 \div 27 = 38,720$ tons.

The above calculation gives a result that is rather in excess of the weight of coal usually recovered, under ordinary mining conditions, although with a proper system of mining it may be obtained. A common rule is to allow 100 tons of coal per inch-acre, which would give, in this case, $5(6 \times 12 = 100) \times 36,000$ tons.

COAL AND COKE NEWS

Harrisburg, Penn.

Overshadowing the inability of the railroads to move coal quickly from mine to market, a water famine has tied up several big collieries in the Schuylkill region. About a dozen collieries are on the verge of a shutdown for the same reason. The scarcity of water has crippled the production of coal seriously since the severe cold weather began.

Thousands of loaded cars have been held in classification yards and on sidings. The congestion, however, is gradually being cleared by the aid of high officials of the railroad companies, who are taking personal charge of affairs and staying "right on the job." Zero weather has frozen reservoirs and streams from which water is drawn for steam purposes. The water situation in the Wyoming and Lehigh fields is reported to be good. This difficulty was overcome years ago by some of the coal companies who put down wells on their properties.

Labor leaders in the anthracite belt who are keeping in touch with the convention of the miners in session at Indianapolis express themselves as well pleased with the vote on the proposition of permitting other districts to take part in the formation of a basis wage scale. The vote was of vital interest in the hard-coal fields, as the entire system of dealing with the coal operators was at stake.

President Dempsey of District No. 1 presented that side of the situation in a lengthy speech. The carrying of the insurgent proposition would have given the soft coal men a right to be in on the settlement of the rates for the anthracite district. This is the domination that the hard coal operators have always fought against and would have, if carried out, ended the status that has made possible an avoidance of industrial conflict during a long period of years.

After five months' investigation of the anthracite situation in the interest of the consumer, former State Representative Frank C. Reese charged on Jan. 25 that the anthracite operators are perpetrating on the public the most "damnable gouge" in history.

Mr. Reese is a Pottsville business man and knows the practical side of the coal business. He charges that the Federal Fuel Administration is permitting the anthracite combine to sell as coal "everything that's black," at the exorbitant fixed rate of Government regulation.

With the transportation systems clogged and many cities suffering for want of coal, Mr. Reese discloses that the vaunted overproduction of the coal mines is merely the production of refuse and dirt.

"From 30 to 40 per cent. of coal going to the market today," Mr. Reese said, "is but refuse. This slate, bone and dirt, with which coal is being adulterated at the highest prices in history, is clogging the railroads and giving but half the heat which the same amount of real coal would give. It is the most damnable gouge in the history of the coal fields."

Mr. Reese finds that the washery coal which is sold as pea coal costs the operator but 20 to 25c. to place on cars. "And then it is coal that he cannot use," is Mr. Reese's comment. "A washery has a gold mine beaten," Mr. Reese continued; "I know of men who are cleaning up from \$150 to \$200 a day on an investment of nothing."

At a meeting held during the week by the Board of Trade of Scranton and officials of a number of coal companies mining in Lackawanna County, some of the details of the mine-cave solution plan were threshed out. The plan of settlement of the problem was considered last week at a meeting of the heads of coal companies in New York. It is expected that another conference with the presidents of the leading coal-mining companies will be held in the near future.

The plan submitted is said to provide for the levying of a tax on every ton of coal mined, the proceeds to be used to prevent caves and repair damages to buildings above ground, if such damages occur. A

spirit of willingness on the part of the operators to consider the plan of the committee and discuss all questions in dispute in a friendly way was evidenced, when the conferees on both sides organized as a joint committee and elected John H. Brooks chairman.

The board committee does not assume that it can settle the problem of itself, but will endeavor to get the best offer possible from the operators.

The operators were represented at the meeting by W. W. Inglis, vice president of the Delaware, Lackawanna and Western coal department; Charles Dorrance, general manager of the Delaware & Hudson Co.; W. L. Allen, vice president of the Scranton Coal Co.; W. L. Connell, president of the Green Ridge Coal Co.; Joseph P. Jennings, general manager of the Pennsylvania Coal Co.; John G. Hayes, vice president of the People's Coal Co.; David Spruks and Cornelius Comegys, of the Bulls Head Coal Company.

Hundreds of Scranton property owners in that fortunate area comprising more than half the built-up section of the city that is covered by the Supreme Court decision in the Penman vs. Jones "third estate" case, have availed themselves of the opportunity to reattach to their properties the right of surface support, which they waived in the old deeds received from the Lackawanna Coal and Iron Co. The "third estate," under the Supreme Court decision, is vested in the Scranton Trust Co., and that company may sell or convey it. The court ruling also fixed that to get the benefit of the right it must be reattached before the support is removed, and the shrewd property owners are hastening to buy it before the present big demand for coal results in more extensive pillar mining.

During the week several conferences were held between State Fuel Administrator Potter and a number of soft coal operators' representatives, as well as with railroad officials, and it has developed that the kernel of discussion was the advisability of introducing soft coal for householders. It is the intention of the fuel administrators to recommend to the people the using of soft coal, not to take the place of anthracite entirely, but to simply aid in supplying the demand that cannot be filled by anthracite.

How soon soft-coal shipments will begin to flow, in no one is ready to say. The reason for turning to bituminous is obviously a matter of supply, bituminous operators hold. Eight times as much soft coal is mined as anthracite every year. More than 60,000 tons of bituminous is mined in central Pennsylvania. Anthracite operators acknowledge they are at the peak of their production. Soft coal men admit the capacity of their mines is going to waste from lack of enough cars and locomotives to haul the coal away.

In the state, during 1917, there were 3748 men killed in the mines, in industries and on public service lines, as against 2814 in 1916. These were divided up as follows: Mines, 1166; industries, 2136; public service lines, 448. In 1916 fatalities were divided up as follows: Mines, 1059; industries, 1225; public service lines, 350.

Luzerne leads the counties of the state in mine fatalities with 222; Schuylkill is second with 161, and Lackawanna third with 151. In industrial fatalities, Allegheny is far in the lead with 336; Philadelphia is second with 268, and Delaware is third with 110. In the anthracite mines 612 men were killed, while in the bituminous field 554 were killed.

PENNSYLVANIA Anthracite

Wilkes-Barre—Among the changes made recently in the executive department of the Lehigh and Wilkes-Barre Coal Co., the most important was the appointment of William James, of Plymouth, to succeed the late Michael Flaherty as superintendent of preparation. The position carries with it full charge of the preparation of coal in the nine collieries and two washeries of the company in the Wyoming field. Mr. James is 32 years of age. New appointments in

the engineering department, all effective from January 1, are: Harry E. Owens, district engineer, Wilkes-Barre district; John B. Tambyln, district engineer, Sugar Notch district; Roland G. Carpenter, district engineer, Plymouth district.

Frank G. Nicholson, a former engineer in the mechanical engineering department, has been appointed as electrical engineer, having supervisor's control of electrical construction and electrical apparatus at all operations of the company. A. H. Partidge, one of the engineers in the department, was promoted to acting mechanical engineer in charge of the mechanical engineering department during the absence of J. H. Doughty, who has entered the military service as captain of engineers' corps.

Pittston—"Somewhere in the Barnum Mine" was written on the envelope addressed to Frank Cicoski, whose questionnaire was sent to him but was returned with above address to the exemption board. This proved to be true, as on Jan. 21 his remains were found under the cave that occurred at the Barnum mine on Jan. 5, the shift about to quit at 11 p.m. having found the body. Decomposition had set in, and early in the afternoon the odor arising therefrom indicated to the state inspectors and company officials that the body must be there. When found it was covered under a quantity of coal. It is supposed that Cicoski had got confused in trying to make his escape and that he ran right under the fall instead of making his way out with the other men who escaped to a place of safety. Deceased was 24 years old.

Dorranceton—Three collieries in Wyoming Valley—the Franklin and Prospect of the Lehigh Valley Coal Co., and the Pettebone of the Delaware, Lackawanna & Western Railroad Co.—operated in whole or in part on Sunday, Jan. 20. This Sunday work in producing coal is almost unprecedented in the history of the anthracite coal region. There was no mining of coal by the Lehigh Valley Coal Co. The breakers of the two collieries mentioned were operated to prepare coal from the William A. breaker, which had accumulated during the week, the William A. breaker having burned down a week or so ago.

Beaver Meadow—The new Evans colliery will be placed in operation about Feb. 3. The contractors have completed the new breaker, and only a few details are necessary to place the colliery in full operation. Starting at a time when the scarcity of coal is sorely felt, the new firm hopes to be able to help relieve the fuel famine by operating the new plant to its greatest capacity.

Scranton—Deeds were filed on Jan. 24 conveying the title of the property of the Coal Lands Securities Co. on Lackawanna Ave. to the Delaware, Lackawanna & Western Coal Department. The new building is to house the coal company offices.

Edwardsville—The Kingston Coal Co. is offering to its employees instruction in mining, mathematics, the common branches, and English to foreigners. Employees should take advantage of this opportunity and attend regularly the evening schools at the company's library on Main Street.

Dunmore—In an effort to increase the coal production as much as possible, several thousand miners employed by the Pennsylvania Coal Co. at its 14 collieries have signified their willingness to work nine hours a day. Frank H. Coughlin, assistant to the president, states that the agreement of the men to increase their working day one hour is a mutual one. "Officials asked the men to work and the employees displayed true patriotism in immediately offering to labor an additional hour." The company expects to greatly increase the tonnage by the men working nine hours instead of eight hours.

Pottsville—A tax of \$500 on a deed to property worth \$500,000 was paid at the courthouse on Jan. 24 by J. Claude Bedford. The tax is for internal revenue on 1500 acres of coal land sold by Fred A. Delano to the New Boston Land Co. The new concern will merge interests which will obviate the necessity of the maintenance of expensive barrier pillars.

Gowen City—The water famine has become so acute that the Roaring Creek Water Co., controlling the supply for domestic and commercial uses, on Jan. 24 notified all coal companies that unless there is rain or a thaw within five days the water supply to the collieries in Northumberland County, already seriously affected, will be reduced 50 per cent. Arrangements are being made by the mining companies to purify mine water for steam and coal-preparation purposes. To do this enormous quantities of lime and soda ash will be required. Officials say the water shortage has never been so acute and fears are expressed that a reduction in the output is inevitable.

Mount Carmel—The entire staff of chemists of the Philadelphia & Reading Coal and Iron Co. is making tests of the mine water at all collieries in this district in a hope that they may devise some chemical process through which to eliminate acids from the water so as to protect metal in machinery in the event that it becomes necessary to use the mine water in the preparation of coal. The water famine is becoming more serious, and it may be necessary to resort to the use of water pumped from the mines.

Throop—A hero medal has been awarded to Mrs. Daniel Thomas, for the heroic act of her husband who gave up his life in attempting to rescue two fellow workmen in the Mount Pleasant mine. The medal was donated by the Carnegie Hero Commission of Pittsburgh, which also awarded a cash consideration to Mrs. Thomas and her three-year old daughter.

Jeddo—The G. B. Markle Co., largest individual coal operator in the state, has started the erection of a steel washery through which a number of culm banks will be prepared for the market.

Drifton—Officials of the Lehigh Valley Coal Co. on Jan. 24, solved the problem of transportation of workmen from Hazleton to its North Side strippings and collieries, by the purchase of two of the trolley cars owned by the Lehigh Traction Co. The workmen who will use these specials are all employed at the Lattimer strippings, No. 9 and Drifton and Wolfe collieries. For some time the Lehigh Valley has been experiencing considerable difficulty with the transportation problem and it was met in this fashion. The cars were sold by the traction company, who will continue their operation for the coal company at special periods.

Stockton—Another tap has been made in the barrier pillar of the old Stockton mine, that will permit a greater flow of water from the flooded and abandoned mines to the sumps in adjoining mines. The successful entrance into the flooded region was made on Jan. 23, by using the same methods that were followed out several years ago. The added hole was obtained by the means of boreholes and gives a huge volume of additional water to the sump in other operations. The hole, as previously driven, while draining the mine, was not sufficient to reduce the levels to any appreciable degree.

Freeland—In order to keep his men employed, General Manager Jessup, of the G. B. Markle Coal Co., is having thousands of tons of prepared coal dumped into empty breasts. The company is swamped with orders, but railroad congestion hampers delivery.

Hazleton—The Lehigh Valley Coal Co. has discovered a way to avoid the delays due to the freezing of fuel brought from mines to the central breakers in the Lehigh region. A steam-heating shed has been erected there and in this cars are kept overnight. Similar plants will be built at other mines in the Wyoming and Schuylkill region.

Through arrangements made with the officials of the above mentioned company, Miss Anna Bock, of the coal company's welfare staff of nurses, has been added to the force of the Hazleton chapter of the Red Cross. During the period of the war the local chapter has received many calls for aid from families of men who have joined the colors. Those will be looked after by Miss Bock and her corps of nurses. Miss Bock is well trained for this class of work. Prior to entering the employ of the Valley coal company in its welfare department, organized when the compensation act went into operation, she was engaged in charity work.

Bituminous

Clearfield—The motor house of the Clearfield Bituminous Coal Co., in Rossiter, was dynamited recently, damaging four large locomotives used to haul cars from the mine, and burning the building. The 1800 men employed in the mine were thrown out of employment.

Connellsville—Two hundred and fifty cars of coal in the yards of the Baltimore & Ohio R.R. here was seized on Jan. 23 by D. W. Kuhn, fuel administrator for the Pittsburgh district. The coal was to be sent to plants of the Jones, Laughlin Steel Co., of Pittsburgh, which is working on war contracts. The coal supply of the steel company from its mines in the upper Monongahela Valley has been tied up since the first of the year by ice in the river, which prevents the movement of barges.

WEST VIRGINIA

Maitland—The tipples of the Houston Colliery Co., at Maitland, in the Pocahontas district, was burned last week by a fire believed to be of incendiary origin. This makes the fourth suspicious fire which has destroyed tipples in that field in the last two months.

Downs—The Rachel Coal Co. is erecting 25 new houses for the use of its employees at Downs, Marion County.

Teter—The Hercules Coal Co. is getting ready to sink a shaft in its coal land near here. The tract has been thoroughly tested, and it is the intention to follow up with the development work in the near future.

Weston—R. Bates Wooters, of Clarksburg, has sold his coal lease to the West Virginia Fuel Co. The purchasers are Fairmont men who contemplate early development.

TENNESSEE

Knoxville—From 10,000 to 15,000 coal miners in the Southeastern Kentucky-Tennessee field worked at digging coal on Sunday, Jan. 20, producing 600 cars of coal. Miners in the Southern Appalachian field have agreed to work ten hours daily instead of eight, when the car supply is available, so as to increase production.

London—Retail coal dealers here have had no coal to sell for a month. Local industrial plants have worked intermittently and wood has been the household fuel.

Nashville—The State Administration has decided to place the entire output of the state's prison coal mines at Brushy Mountain in the hands of W. E. Myer, state fuel administrator. It is proposed that the mines will make at least partial deliveries under existing industrial contracts.

MONTANA

Bozeman—What is believed to be one of the most important fuel discoveries in Montana in a number of years is a new 9-ft. vein of coal of excellent quality recently discovered by J. A. Black, Charles Stanley and W. DeHoog, of Manhattan, on their coal properties in the Trail Creek section. Thirty men are now working on the ground.

Roundup—The Carbon Mine Co., a Minnesota concern, is to sell the Keene coal mine at Horsethief Creek to a new concern, which is to reopen the property.

Lehigh—Lehigh mine No. 2, lying two miles from the present plant of the Cottonwood Coal Co., has begun producing coal. A new railroad line and new tipples have been completed and a temporary screening plant is being erected. A force of 150 miners is now working.

OREGON

Marshfield—The Henryville mine, leased a year ago by R. M. Jennings, has been turned back to its owner, the Coos Bay Lumber Co., with liabilities against it amounting to nearly \$30,000. The mine had just commenced to reap the rewards of heavy investments in mining machinery and development work extending over a period of about a year, and an output of from 50 to 70 tons daily was going forward to marketing points. Since Mr. Jennings leased the mine new drifts and tunnels had been opened and the mine was brought to a high state of efficiency. It is said the Coos Bay Lumber Co. will continue the operations.

H. P. Scheol and William McArthur, of Tenino, Wash., have submitted a proposal to the citizens of Marshfield to establish a coal-briquetting and byproducts plant, with an initial capacity of 160 tons daily, to employ at the start from 50 to 75 men and within a year agree to have a \$250,000 industry operating. Their proposal is they shall receive a free site and bonus of \$15,000. Marshfield capitalists have obtained the site and are within a few thousand dollars of having the bonus ready. The plant would operate entirely on the slack coal which is wasted at the various mines.

Foreign News

Stellarton, N. S.—An explosion occurred shortly after 5 o'clock in the evening of Jan. 23rd, at the Allan shaft of the Acadia Coal Co.'s collieries, resulting in the death

of 91 men. A blast of smoke was seen to come from the mouth of the pit, but no noise was heard. Nine men were brought up alive from the upper levels, but all on the lower workings were killed. The Allan shaft was one of the most productive mines in the Nova Scotia coal fields. The company has had, during the past two years, a great deal of difficulty with the shaft on account of fires caused by spontaneous combustion. Galleries that were on fire have been walled off by reinforced concrete to save the mine. A similar explosion took place in the shaft three years ago, fortunately happening on a Sunday, when there were but few men at work. Some 50 years ago there was an explosion in the same seam of coal, known as the Ford Pit explosion, in which more than 100 lives were lost. The recent catastrophe will reduce the output of coal by 500 tons per day.

Ottawa, Ont.—A meeting of the War Committee of the Canadian government was held Jan. 27 to devise measures for the relief of the coal situation. It was decided to take immediate action to secure increased coal production from the mines of Eastern Canada and to speed up the bunkering of ships in the Eastern ports. Fuel Controller Magrath has gone to Washington to confer with Fuel Controller Garfield of the United States.

Victoria, B. C.—Coal mines in the Crow's Nest Pass are putting out the greatest amount of coal in their history. The rate is now 23,000 tons a day.

Ladysmith, B. C.—A crew of fifteen men is at work at the colliery at Coalmont, taking out coal and getting the property in shape for large operations again. Blake Wilson and R. S. Lennie are the owners of the mine.

Personals

Harry J. Meehan has been appointed managing partner of Cosgrove & Co., of Johnstown, Penn., with which he has been associated as a partner for some time. Starting as a trapperboy at the age of 12 years, and working his own way up through the various stages of the coal mining business, Harry J. Meehan has worked at all phases of coal mining, being a trapper boy, triprider, spragger, digger, assistant foreman, foreman, engineer, general manager.



HARRY J. MEEHAN

superintendent and practically every other position in the business. Mr. Meehan will establish headquarters in Johnstown with offices in the Swank building. He will have supervision over the following plants represented by Cosgrove & Co.: Lenox Coal Co., Barnesboro, Cambria County, Penn.; Thermal Smokeless Coal Co., Portage, Cambria County; Homer City Coal Co., Homer City, Indiana County; Grazer Coal Mining Co., Foustwell, Somerset County, Penn.; Neel Smokeless Coal Co., Blough, Somerset County; Millerton Coal Co., Casselman, Somerset County; Moxham Coal Co., Johnstown, Penn.; Ernest Coal Co., Johnson City, Ill.; Marion & Pittsburgh Coal Co., Marion, Ill.; Sootless Coal Co., Pittsburg, Ill. He will also have charge of the management of the Marion & Eastern R.R., in Illinois.

E. B. Sutton, the mining engineer who has charge of rescue work in southern

mines for the Bureau of Mines, has resigned to enter private employment.

Thomas J. Dunbar, formerly Buffalo representative of B. Nicoll & Co., of Pittsburgh, has taken the position of Canadian manager of the lately organized Ontario & Pittsburgh Coal Co., with headquarters in Toronto.

Richard W. Gardiner, of Pittsburgh, Penn., Commissioner of the Pittsburgh Coal Producers Association, with offices in the Farmers Bank Building, at a recent meeting of the operators' association was appointed district representative in the distribution of coal.

Daniel A. Wentz, a Philadelphia coal operator, has been added to the staff of General Goethals. Mr. Wentz has been in Washington since the early days of the war as an assistant to George A. Peabody, chairman of the coal committee of the Council of National Defense. He now has been placed in charge of the fuel and forage division of the quartermaster department. Preston Davis, a New York lawyer, has been named as Mr. Wentz's assistant.

Obituary

William Law, native of Dunmore, and one of the pioneers in the development of the coal-mining industry in Lackawanna County, died recently at the home of his daughter, at Albany, with whom he had been visiting for several days. In 1874 Mr. Law was at the head of the Hillside Coal and Iron Co., leaving this company to form a partnership with J. M. Robertson, of Moosic, and operated several collieries in and around Scranton and Avoca. After disposing of his coal interests he purchased Bruff's Island, in Chesapeake Bay, and later made his home at Chevy Chase, just outside of Washington. He is survived by his widow and three children.

Lieut. Gordon D. Cooke, formerly with the McGraw-Hill Company, Inc., publisher of "Coal Age," died at the base hospital at Fort Bliss on Jan. 10 from pneumonia. Lieutenant Cooke was graduated from the University of Michigan in 1916. As a preliminary training for his work in the Field Service department of the McGraw-Hill Co. he served on the editorial staff of the "Engineering News-Record" for a short period, and later took up quarters at his home city, Detroit, Mich. On Sept. 1, 1917, Lieutenant Cooke entered the service of the United States at the age of twenty-four, with the commission of Second Lieutenant in the Engineer Corps. He was temporarily stationed 75 miles from a railroad in New Mexico doing military mapping for the United States Geological Survey.

Freedom N. Ulrick, who was the Philadelphia sales agent of the Lehigh Coal and Navigation Co., and had been connected with the company since 1907, at which time he became Eastern sales agent with headquarters in Boston, died suddenly on Tuesday afternoon, Jan. 22, from heart failure. After serving the company in Boston for some time, he was brought to Philadelphia as assistant general coal agent. Prior to his service with this company, he was connected with the Philadelphia & Reading Coal and Iron Co., Coxie Brothers & Co., and M. L. Cobb, and sold coal for them in the New England market. Mr. Ulrick was about 47 years of age and had a host of real friends. His funeral took place at his residence in Germantown on Friday, Jan. 25, and was largely attended. He is survived by his widow.

Industrial News

New Baden, Ill.—The coal mine here was reopened Jan. 28. It was closed on account of a cave-in. The mine employs 325 loaders, 20 electrical machine workers and 150 laborers.

New York, N. Y.—All anthracite waiting transport from New Jersey tidewater terminals to New York city will be pooled to avoid delays in shipment. The step was taken by dealers, administrators and others without consulting the Federal fuel administration.

DuQuoin, Ill.—The Scott Brothers coal interests, with offices in the Pierce Building, St. Louis, Mo., have acquired a large coal acreage near here, and will soon be ready to begin operations on what is said to be one of the largest strip mines in this part of the state.

Pittsburgh, Penn.—It has been announced that the Republic Iron and Steel Co. has bought the Bessemer Coal and Coke Co. for \$3,000,000. The Republic Iron and Steel Co. has plants in the Shenango Valley, as well as a few in this city and quite a number in the South. It will use the Bessemer coal in many of its byproduct plants.

Cincinnati, Ohio—At the annual meeting of the Cincinnati Coal Exchange, held on the evening of Jan. 25 at the Business Men's Club, the election of officers was held. R. A. Colter being chosen as the successor of R. A. Reilly, and both the retiring and the new presidents made appropriate addresses to the members. President Colter also announced standing committees for the year.

Louisville, Ky.—Estimates of Louisville engineers are to the effect that during the five heatless days the city saved 25,000 tons of coal, while, for the rest of the state, the reduction in consumption was 40,000 tons, making an estimated reduction in consumption of coal of 65,000 tons. An estimate had it that 31,000 workmen were idle in Louisville during the five days.

Birmingham, Ala.—At the annual meeting of the Alabama Safety Association recently held, S. L. Morrow, chief engineer of the Woodward Iron Co., was elected president as the successor of James L. Davidson, who had filled the office for several years. John N. Vincent was elected as secretary-treasurer to fill the vacancy caused by the removal of E. B. Sutton to West Virginia.

Middlesboro, Ky.—Four Kentucky coal operators, all charged with selling coal at prices higher than those prescribed by the Fuel Administrator, are under arrest by the United States Marshal and are answerable to the United States Court at Covington or at Pineville, Ky. Other warrants making similar charges are to be served. The four defendants are J. W. Gayle, Mayor of Covington, Ky., and C. C. Lancaster, of the same city, partners, and J. W. and Gillus Nolan, of Harlem, Kentucky.

Clearfield, Penn.—In the License Court here on Jan. 21 applicants in seven little mining towns, namely Houtzdale, Osceola, Madeira, Ginter, Ramey, Smoke Run and Glen Richey, showed that their receipts totaled \$336,168.73 during the year, which does not include the receipts of the Madeira brewery. The dry federation is attempting to show that, besides decreasing the output of coal, a considerable amount of coal could be conserved by closing all barrooms until after the war.

Louisville, Ky.—On a warrant sworn to by E. L. McDonald, member of the local fuel committee, R. C. Tway, president of the James Coal Co., Louisville, has been arrested by the United States Marshal. He is on bond to answer to charges that he has persistently refused to make the reports on his business demanded by the Fuel Administration. This arrest followed two days after the arrest of Mr. Tway on the charge of an assault on a customer whom he is alleged to have undertaken to overcharge on a ton of coal for retail delivery.

Cincinnati, Ohio—Plans for the opening of a new coal route by rail from the Kanawha coal district of West Virginia at a rate reduced from \$1.55 to \$1.15 a ton for coal have been erected for the benefit of Cincinnati coal men, through the action of the Interstate Commerce Commission in approving on one day's notice, instead of the usual 30 days, a special freight tariff filed for that purpose. The new route, which is designed to avoid the congestion existing on the usual route, is by way of the Kanawha & Michigan and the Baltimore & Ohio railroads.

Columbus, Ohio—General Manager Connors, of the Hocking Valley Ry., states that the road will at once get ten additional engines loaned by the Pere Marquette, Ann Arbor and Kanawha and Michigan roads. The Hocking has loaned 1000 coal cars to Eastern lines in carrying out the plans for clearing up the coal blockade. The cars will be returned as soon as additional motive power is available to move all of the loaded cars out of the valley. During the present state of weather, he stated, the engine efficiency was not more than 40 per cent. of normal.

Roundup, Mont.—The Republic Coal Co., operating the big mine at Klein, has brought suit against the treasurer of Musselshell County for a refund of \$4429, alleging that the operation of the mine for the year ending June 1, 1917, netted a loss of more than \$45,000. The tax was paid under protest. The complaint alleges that the production for that year was 618,000 tons, and that the cost of production, overhead charges and repairs exceeded the value of

the coal. The mine supplies the Milwaukee R.R. with its coal and does no commercial business.

Columbus, Ohio—Coal shippers as well as operators in Ohio are very favorably inclined to the zone plan of distribution, which many believe will aid wonderfully in relieving the present stress. It is thought that by that plan the shortest haul can be secured and much railroad work will be eliminated. Under the tentative plans West Virginia and southeastern Ohio mines are to be used in supplying eastern and central Ohio and the State of Michigan. Kentucky mines are to be used in supplying western Ohio and eastern Indiana. A strong campaign will be waged for the adoption of the zone system.

Columbus, Ohio—The Columbus Shippers' Terminal Pool Association, which is now working with a complete force of employees, is showing up efficiently during these days of stress. The pool is handling on the average of about 70 cars daily. Of that amount about half is taken for domestic consumption and the remainder for utilities and steam users. The Columbus Railway, Power and Light Co., the large Columbus utilities, was quite short of fuel for a portion of the past week, but toward the close it had sufficient fuel for some time in the future. For a while street car service was suspended, mostly in the evenings.

New York, N. Y.—The Boston, Cape Cod and New York Canal Co. has temporarily established a reduced rate of toll for steamers carrying miscellaneous freight, and steamers, barges and "boxes" carrying crude material. The reduction of toll charges is equivalent to about 20 per cent. of prevailing rates. To further increase the efficiency of the Cape Cod Canal, this company has requested the New England Coal Barge and Towers' Association to place several tugs at the canal to assist in delivering coal to New England ports. Buzzards Bay could be made the distributing point where barge tows might be broken into several units if necessary, thus avoiding the loss of time now entailed in taking complete tows to Boston for distribution elsewhere.

Jackson, Ky.—The Breathitt Coal Fields Exchange, with capital of \$10,000, has been organized and will buy coal from operators and sell in the market, operating under Government price regulations. R. C. Musick, of Jackson, is interested. E. B. Cardwell is manager.

Luzerne, Penn.—The Raub Coal Co. is rushing to completion the erection of its new breaker to replace the structure recently destroyed by fire.

Floodwood, Ohio—The Manhattan Coal Co. is opening a new mine at Floodwood, located on the Hocking Valley R.R., which will have 300 tons and possibly more capacity. It is a shaft mine and the equipment will be modern in every respect. The company controls a fairly large acreage at that place.

Cincinnati, Ohio—The Hamilton County Fuel Administration on Monday, Jan. 21, issued an order commandeering all coal on tracks in the county, amounting to more than 600 cars, not including those on private industrial sidings. This action was considered necessary in view of the dangerously small amount of coal on hand to supply domestic consumers, essential public utilities and city and county operating and charitable institutions. Relief was so far effected that there was no interruption to the operation of street cars or of light and power plants serving the public, and no actual lack of coal at institutions or among residents, so far as can be discovered. The inadequacy of the fuel supply for manufacturing plants is now the most serious phase of the situation, as the needs of these large consumers have been postponed to the more pressing requirements of the other consumers referred to.

Louisville, Ky.—The Louisville Gas and Electric Co., which pipes natural gas from West Virginia, fails to supply the needs of its consumer customers when the temperature is low. Under the franchise it is penalized by enforced discounts. The total discounts for December and January have now reached 110 per cent., an average of 55 per cent. on each consumer's net bill for each month. The company pleads that unprecedented conditions should absolve it from the letter of the franchise and is now asking that the city permit it to ration gas. Large householders, apartment house owners and others are getting most of the present supply—6 per cent. of the consumers, according to the company's statement, burning more than half of all the supply. The city administration is insisting that the company's contract must be enforced. Every residence in Louisville is on the distributing lines of the Louisville company.

MARKET DEPARTMENT

GENERAL REVIEW

Lack of improvement in coal situation largely due to bad weather conditions. The greatest help the coal situation could have would be mild weather.

The coal-conserving holidays and the following heatless Monday have had less effect in relieving the scarcity of coal than was probably anticipated when they were ordered. While the railroad situation shows considerable improvement in some localities, the "Weather Man" has apparently shown great sympathy for the Kaiser. Storm after storm has swept the country until in many regions the snow is now 2 ft. or more deep on the level, with huge drifts in many places. Thus far the winter is generally conceded to be the worst in many years. Of course, the heavy snowfall has its redeeming features as in many localities, particularly in the West and Southwest, it is an indication of abundant crops the following year. But crops do not keep people warm in the winter. From all over the country come reports of the small and inadequate supplies of fuel on hand being doled out in half tons and ton lots to consumers who never quibble over price or quality, their only concern being to secure the coal. In many instances, all over the East in particular, long lines of people are besieging coal offices and yards, carrying away 100-lb. sacks of coal in all types and descriptions of vehicles from a barrel-stave togoggan to a high-powered automobile. Strange as it may seem, this clamor for coal is probably as insistent in Philadelphia, within 150 miles of the coal fields, as it is in any other city. The fact that coal cannot be supplied has furnished ammunition for all manner of criticism and complaints against everyone in any way whatsoever connected with the coal industry, from the meanest trapper-boy in the mines to the President of the United States. In more than one instance, and in more than one city, the police have been called upon to preserve peace and order in the offices of coal retailers. Lately there has come forward a demand from comparatively well-to-do citizens who had laid in their ordinary winter requirements of coal, but owing to the severe weather have consumed this supply months earlier than is normally the case. It now seems difficult for this class of people to understand that they cannot secure all of any commodity that they have the inclination to buy and the money to pay for.

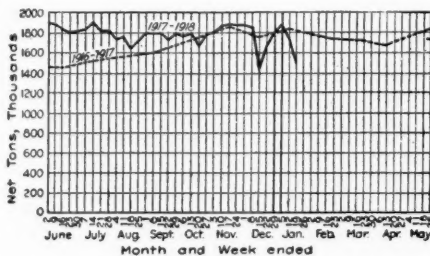
One bright spot in the situation that has developed in the recent past is that bunkering of steamships at Tidewater is now approximately normal. There are not at present, thanks to the partial cleaning up of congestion in Tidewater rail yards, the long delays in bunkering of ocean-going freight and passenger vessels that prevailed two weeks ago. If the transportation of sea-borne freight is essential to the American cause, a long step in this direction has been made.

The atrocious weather conditions, extreme cold and heavy snow have exerted an adverse influence on mining, as well as on transportation. Not only is the placing of empties and the removal of loads at the mines made extremely difficult, but the operation of tipples and breakers is hard to maintain. In many instances in the recent past the loaders underground have had to be moved to the surface to use their shovels in clearing tracks and switches of snow. Another adverse influence of the extreme cold is the shortage of water supply. Many mines depend upon surface streams for boiler and washery water. These have sometimes frozen almost solid to the ground, and in several instances water must be hauled by rail several miles in order to supply the collieries. This method of water supply always unsatisfactory and expensive is doubly so when the thermometer is well below the zero mark. To sum up the whole situation, although under the circumstances considerable progress has been made and every effort is being exerted to relieve the coal shortage, permanent relief will probably only come with milder weather.

COAL PRODUCTION

Another alarming depression nearly equaling in severity that of mid-December affected the bituminous industry during

the week ended Jan. 19. The total production of soft coal, including lignite and coal made into coke, is estimated at 8,602,000 net tons. The average per working day was 1,434,000, the lowest reported since the week of Dec. 15, when the daily average fell to 1,406,000 tons. The cause of this profound depression was again an un-



precedented storm which paralyzed railway traffic over much of the North and Middle West, during the early days of the week. The production of beehive coke is estimated at 527,000 tons, an average per working day of 88,000 tons, as compared with 84,000 for the week ended Dec. 15. Anthracite shipments dropped from 36,178 to 31,861 cars.

CARLOADS OF COAL AND COKE ORIGINATING ON PRINCIPAL COAL-CARRYING ROADS

WEEK ENDED:

Dec. 29 Jan. 5 Jan. 12 Jan. 19

Bituminous shipments, 121 roads...	158,596	168,936	180,411*	151,567†
Anthracite shipments, 9 roads...	29,476	25,604	36,178*	31,861†
Beehive coke shipments, 4 roads...	10,211	9,348	11,560*	10,826†

* Revised from last report. † Subject to revision.

BUSINESS OPINIONS

The Iron Age.—With so large a part of their product, particularly in heavy lines, going to the Government or its Allies, or to plants having Government contracts, the iron and steel industries, felt less than others the closing down order of the Fuel Administration. Fresh snows and intense cold combined to aggravate the freight blockades, as the order went into effect, and made more difficult any measure of its effects.

Bradstreets.—"Business as usual" was abandoned as a trade slogan in the territory east of the Mississippi river this week, thanks to the Fuel Administrator's order closing industrial plants for a period of five days and business in general for one day. The repression thus developed strikingly contrasts with relatively smart activity in that part of the country west of the river just named. However, the industries of the country are all backlogged with heavy orders, principally for governmental account, and while the stoppage of work brought about by the Government decree plus the baneful effects of inclement weather, cramped production and restricted trading over a wide area, some slight improvement in the fuel situation has resulted.

Dry Goods Economist.—The important developments for the retailer are the probable effects of the temporary cessation of output through the manufacturers' general adherence to the Fuel Administrator's order. Of course, there are many merchants who are concerned over that feature of the order which closes all stores east of the Mississippi River on each Monday for a period of ten weeks. At this writing it is too early to attempt to gage fully the extent of the curtailment, but some of its results are apparent in the higher prices made this week on cotton, wool and silk fabrics.

The American Wool and Cotton Reporter.—Last week was a quiet one in the local wool market. The enforced closing of the mills by order of the Fuel Commissioner was merely one more adverse factor in the already uncertain situation.

Marshall Field & Co.—The current wholesale distribution of dry goods for the week equals the heavy volume of the correspond-

ing period a year ago. The volume of road sales for both immediate and future delivery is considerably larger than in the same week of 1917. Customers have been in the market in greater numbers. The market on domestic cotton continues strong. Collections are normal.

Atlantic Seaboard

BOSTON

Receipts extremely small, and outlook bad. Government priorities at loading ports take the coal and other needs wait. Under order of Jan. 17 fuel authorities refuse emergency supplies for any but vital needs, "Storrow coal" comes forward both all-rail and by water, but shipments hampered. Anthracite shipments recover slightly from paralysis of last month, but deliveries are small and irregular.

Bituminous.—The prospect for fuel is so disheartening that already the owners of large factories are preparing to save their property from injury by reserving enough fuel for bare heating purposes. The state fuel administrators are warning all manufacturers, whether working 100% on Government orders or not, unless specially exempt by order from Washington that emergency coal cannot be supplied except to the "current necessary requirements" of consumers on the preferred list beginning with railroads and domestic consumers. The rule is most drastic, but in no other way can the utterly inadequate supplies now coming forward reach the really vital needs and save the people from undue privation. Utilities like the Cambridge, Mass., and Hartford, Conn., electric light plants are running on a hand-to-mouth basis and the railroads are on narrower fuel margins than the public realizes.

Inland cities like Worcester, Mass., normally depending almost exclusively upon all-rail deliveries are now feeling the pinch. Coal is being taken from school-houses and city buildings to provide for hospitals and for the wants of people who buy in small lots. Retail dealers who have had a prosperous business now confess their inability to get coal and the number of those who look to the fuel administration for relief is increasing by leaps and bounds.

The Panama R.R. transport "Achilles" has now made her third trip to Boston from Hampton Roads, but as yet there is no certainty she will continue in the service. Each trip has brought upwards of 12,000 tons of bituminous which has been distributed as prudently as the fuel authorities could manage and it has helped in many serious cases from Maine to the Connecticut line, but the situation is even more acute now than when the cargoes were received. From the second and third cargoes of this ship as well as from other vessels with emergency coal consigned to J. J. Storrow, fuel administrator for New England, not a single car was sent to any industrial plant, excepting one or two instances where Washington had granted special exemption.

Manufacturers who are being pressed by the War Department to show delivery of goods ordered find it difficult to understand why they cannot be included on the preferred list. Colleges and other educational institutions are anxious to be classified as "domestic consumers," but the order of Jan. 17 is being interpreted strictly and the coal will hardly be forthcoming. As it is, it takes constant vigilance to keep the railroads, hospitals, and other preferred needs supplied for more than a few days at a time.

The list of mines directed to load assigned cars on the "New England order" of Jan. 3 was further modified on Jan. 22. Several mines that were shipping up to capacity on other priorities were taken off the list and others substituted. Most of the substitutions are of relatively small operations, although this time each mine substituted is required to load only from one to three cars per day, as the case may be, and this arrangement it is hoped will furnish a larger percentage on the 500-car quota than heretofore. Of the cars that have been shipped for the fuel administration considerably more than half have been required by the New England railroads.

Congestion at Maybrook, N. Y., one of the principal gateways for New England, got so bad last week that an embargo was placed. Coal usually routed via that point is now being sent to New York ports for dumping into boats in the hope this will hasten delivery to the points in distress. Coal on the New England priority that emanates on the B. & O. will also be forwarded via tide-water, for the same reason.

Loading at New York has been extremely slow for anything but coal for Government uses. At one port a barge has now come to the top of the list for five times for loading, only to find each time that the coal has been taken on priorities. Appeals are constantly being made to the fuel administrations to protect boats from such delays.

At Hampton Roads there exists what might be called a "decidedly decreased improvement." More than 100 bottoms are waiting while more than 25 ships for Government purposes have cleared. The extreme slowness with which the Hampton Roads situation has been handled calls for radical treatment, and there is a prospect that something drastic will be done.

Meanwhile, the discussion of a zone system of distribution is interesting the trade. Just how New England will fare in the allotment is not disclosed, but certainly there seems no possible change that would not make for improvement. Operations ordinarily loading for this territory are swamped, many of them, with priorities of one kind or another, and together with the heavy supplies demanded for engine fuel there is no coal left for ordinary commercial contracts. The percentage now coming forward on contract is extremely small, either by water or rail.

In Boston practically all bituminous coming to retail dealers is being pooled for distribution under the direction of a committee which has control over all deliveries of more than a ton each. This has been found necessary in order to assure necessary institutions sufficient fuel to keep them running. The bunkering of ships is a problem of increasing difficulty in view of the light receipts of commercial coal.

Anthracite—The ice embargo lifted last week enough to let a few barges out of the Delaware, but loading is even slower than before, and it is increasingly difficult for cargoes to run the gauntlet of New York retailers. Domestic sizes are again ill-assorted and several cargoes are coming forward with broken and egg when the market requires nothing so much as stove and chestnut. To this extent receipts may be said to have "improved," although receipts of water-borne coal especially are light and more than intermittent.

All-rail shipments are slowing up, partly because of congestion at the transfer points, but chiefly through interruptions in mining because of the weather. "Solid trainloads" are therefore in the discard for the present.

Boston retail prices have been advanced 40c. on domestic sizes by authorization of the local fuel committee, making the present figure \$10.25 per ton of 2000 lb. side-walk delivery. There are several dealers today without a ton of anthracite in their yards.

NEW YORK

Not much improvement noticeable in situation. Receipts do not increase and storms balk efforts of officials. Pooling of anthracite expected to help. Bituminous operators complain of lack of cars and of men leaving for other industries. Bunkering nearly normal.

Anthracite—Whatever improvement may have been expected in the situation here was dispelled by a storm of snow and sleet and a considerable drop in temperature the first part of the week. Fuel administrators and tradesmen were hopeful that within a few days with a continuance of favorable weather conditions the fuel situation so far as the Metropolitan district was concerned, would show much improvement. Larger receipts of fuel were reported at the Tidewater docks and with the ice clearing out of the river and bay it would have been an easy matter to deliver the coal to the retail dealers yards, and the prospects for accomplishing it were encouraging.

While no decision has been received from Washington regarding the pooling of anthracite, as advised by State Fuel Administrator Wiggin in a telegram to Dr. Garfield last week, the shippers to several of the coal loading docks have gone ahead on their own initiative and are pooling their own coals according to sizes. On Monday of this week shippers of coal to Perth Amboy met and decided to pool their coals. The shippers to some other docks had previously decided to do the same thing and it is expected that within the next week the shippers to other docks will make the same decision.

The pooling of coal was also advocated by the railroad officials and coal operators at a meeting held late last week at the conclusion of which President Loomis of the Lehigh Valley issued a statement which said that in order to reduce the accumulation of cars on hand each day at the docks and avoid a large amount of switching it was agreed subject to the approval of the Administration, to pool all anthracite coal at New York tidewater ports.

Mr. Wiggin in his telegram to Dr. Garfield suggested that the pooling be done by the reduction of sizes from 8 to 4.

A modification of the new demurrage order has resulted in shipments coming forward in good volume, it having been feared that a continuance of the order which reduced the free time for cars would cause producers to send their coal elsewhere.

An important development during the week was the sending to this city by Dr. Garfield of James B. Neale and Arthur Leroy, his two assistants who are thoroughly acquainted with the anthracite situation. Several conferences were held with the Fuel Administrators and others and then Mr. Neale and Mr. Leroy returned to Washington to lay their recommendations before Dr. Garfield. So far no word has been received from Washington as to the outcome of the conferences.

The selection of J. D. A. Morrow, general secretary of the National Coal Association to take charge of the distribution of coal meets with the approval of the local trade, many members of which know Mr. Morrow personally. A few weeks ago he addressed the members of the Wholesale Coal Trade Association in this city.

The second coalless and heatless Monday in compliance with Dr. Garfield's order resulted in more places being closed than on the previous Monday, and it is expected that the saving of coal will be larger. Inspectors were scattered throughout the city to see that the order was lived up to. Very few violations were reported.

Many complaints are heard of higher prices charged by the cellar peddlers than those fixed by the Fuel Administration. There is still much suffering among the poorer class because of their failure to get coal as needed.

The mayor's committee of women on national defense has started an educational campaign on the scientific methods of building fires, and will also report all complaints of over-charging and hoarding by coal dealers to the authorities.

In view of the present conditions and the none too bright prospects for next summer and winter, people living in the rural sections and small communities of the state have been advised to cut and store all available wood.

It was learned early this week that on Friday, Jan. 25, a meeting of anthracite operators was held here, at which a committee of three was appointed to arrange plans for the proper distribution of anthracite coal during this year. This committee consists of President Richards, of the Philadelphia & Reading Coal and Iron Co.; Samuel Warriner, president of the Lehigh Coal and Navigation Co., and Joseph Dickson, of Dickson & Eddy.

It is said that the distribution will be based upon average tonnages consumed in the year 1916 or 1917, allowing increases where the population is greater.

The pooling of anthracite is expected to be general within the next few days. A meeting of shippers on the Philadelphia & Reading was held at Philadelphia on Tuesday of this week, at which the matter of pooling coal was discussed.

Production is better than for several days past. Heavy storms impeded railroad transportation but coal moved quickly and without much delay. Many of the collieries are now working to full capacity and production is heavy. Warnings have been issued regarding possible floods as soon as the weather moderates because of the heavy snow now covering the mountain sides.

Local middlehouses and shippers are being urged to send coal to New England and into Canada, dealers from the Dominion claiming the shortage to be severe.

Locally there is not much change in the situation. Some dealers fail to see any betterment while others see a slight improvement. There is no coal in many of the retail yards, while the surplus in the consumers' bins continues to become smaller owing to the unusually hard winter. The situation on Long Island and in Brooklyn is particularly alarming. Receipts at these points have not been as large as within the past few weeks, although shipments through the Pennsylvania tubes has been resumed.

Many barges loaded with coal continue to get sunk because of the heavy ice flows. With the exception of a narrow channel the Hudson River is said to be frozen en-

tirely across north of the New York City line.

Urgent call for coal comes from several of the smaller towns in New Jersey but adjacent to Newark and Jersey City, no coal having been delivered in some of them for the past week or ten days.

While there is no surplus of buckwheat and the two smaller sizes there is no absolute scarcity and dealers are able to keep enough coal in the bins to keep the fires going.

Current quotations, per gross ton, f.o.b., Tidewater, at the lower ports are as follows:

	Circular	Individual
Broken.....	\$6.30	\$7.05
Egg.....	6.20	6.95
Stove.....	6.45	7.20
Chestnut.....	6.55	7.30
Pea.....	5.05	5.80
Buck.....	4.30@5.00	5.50@6.00
Rice.....	3.75@3.95	4.50@5.00
Barley.....	3.25@3.50	4.00@4.25
Boiler.....	3.50@3.75	

Quotations for domestic coals at the upper ports are generally 5c. higher on account of the difference in freight rates.

Bituminous—The one bright spot in the bituminous situation is the reduction in the number of ships waiting in this harbor for fuel before taking on cargoes. Special efforts have been made to secure fuel for the vessels which a few weeks ago exceeded 150, and which was given as one of the reasons for the issuance by Dr. Garfield of his drastic order.

There is not much change in the supply of free coal. Contract coal is not moving as freely as is desired and complaints of slow deliveries are numerous.

Some mines were idle for ten days at a stretch this month because of the lack of cars while on other days the average time of employment has been less than 3 hr. daily. This has resulted in much uneasiness among the workers and there have been many defections to other industries.

The railroads continue to confiscate whatever coal they desire and when they have taken all they want and the other priorities have been satisfied there is very little left for the producer to send to his regular trade. However there is little complaint heard because of this.

The Wholesale Coal Trade Association has forwarded to Dr. Garfield a resolution asking that after the present accumulation of ships in the harbor has been supplied with bunker coal by the United States Shipping Board and the Fuel Administration, the coal bunkering companies be allowed to have their business back.

The embargo on all shipments except fuel, food and a few war necessities over the Pennsylvania lines east of Pittsburgh, the Baltimore & Ohio and the Philadelphia & Reading roads helped to move coal to tidewater considerably.

No definite announcement has yet been made concerning the renewal of contracts some of which will soon expire, but whatever is done will be subject to examination by the Fuel Administration in Washington.

Strenuous efforts were necessary this week to get coal to the factories lining the Brooklyn water front, as well as Newtown Creek and the Gowanus canal. Heavy tugs were used for breaking the ice and it was proposed to appeal to the Federal authorities for permission to use army and navy vessels for the work.

Reports indicate that the New England situation continues serious. Many urgent calls are received by local dealers for supplies.

PHILADELPHIA

Anthracite situation at its worst. Snow and cold interfere badly. Thousands of homes without coal. Mild weather only hope of relief. Weather conditions more serious at mines. Bituminous coal seized for domestic use. Suspension order helps freight movement. Bituminous famine continues, with situation critical. Heavy arrivals of bunker coal. Operators demand change in Lever law.

Anthracite—With the arrival of the snow storm early in the week the climax in the anthracite shortage seems to have been reached. Notwithstanding all the earnest efforts of the state and city fuel authorities conditions have grown steadily worse until thousands of homes are without coal and steady streams of unfortunate people besiege the coal yards. In many cases when a dealer receives a car of coal the entire contents are sold in small quantities directly to the consumers, who carry it away in buckets and baskets, in addition to express wagons, sleds and even baby carriages.

Late in the week the chairman of the city fuel committee admitted that the suffering is becoming greater and more acute, and that he sees no way out of the difficulty.

except a spell of mild weather. Goaded on by the newspapers many people vent criticism upon every person in any way connected with the coal business. Dealers state that they are threatened almost daily and have at times been compelled to summon the police to clear their office of angry would-be customers. Even Chairman Lewis of the fuel committee has not been immune and it is not unusual for irate citizens to be ordered from the office. The two principal reasons for the inadequacy of the supply—war and weather—seem to be completely ignored.

On account of the continued severe weather those people who were fortunate enough to fill their bins in the spring are now becoming in need of fuel and insisting on having it. In many cases these people are unable to understand why they cannot have what they have the money to pay for. If it was not for the seriousness of the situation the influence which this class of people seek to bring to bear in order to procure a ton of coal would really be amusing. We even know of retail coal men who have less than a quarter-ton in their own cellars.

Early in the week the State Fuel Administrator again appealed to Dr. Garfield for reconignment to Philadelphia of coal that could not go forward promptly to New York and New England owing to car congestion and explained that unless some action were taken there would be suffering here to an incredible degree. It is not believed, however, that any such request will be granted. The newspapers continue to print in large type that coal is being diverted in transit from here, but overshadowing all other troubles word comes of a water famine in the mining region which has tied up a number of the largest operations in the Schuylkill region. The frigid weather has frozen the mountain streams almost solid and in some instances water is now being hauled for boiler use at the mines. In addition snow is an almost daily occurrence, with at least two feet on the level for the past three weeks. In order to keep the sidings clear about the mines the mine workers are called upon sometimes for the greater part of the week to shovel snow.

The most important action taken by the fuel committee to relieve the domestic situation was the commandeering of 50 cars of bituminous coal which have been distributed to a number of retail yards. While this is a strange fuel to the consumers here there is not the least doubt that it will be eagerly taken by all who are fortunate enough to get it. The committee has arranged to distribute at least 5000 tons of this coal, of which the above 50 cars was the initial shipment.

While there is little complaint from the consumers, the retail prices appear to have an upward trend, while the quality certainly does not improve. In West Philadelphia especially the average price for stove and nut is close to \$10. Most of the dealers in this section of the city are paying the individual operators premiums of 75c. a ton. As to quality the big companies seem to be furnishing the better prepared coal, while some of the smaller operators have apparently neglected all caution in their desire to get out tonnage.

In the steam trade all grades continue to be sold up and some of the larger shippers are getting behind on their barley orders. This is on account of much of this coal coming from washeries and stock piles, which are difficult of operation in the present wintry weather. The sales of culm, principally by the individuals, continue to show good increases.

The prices per gross ton f.o.b. cars at mines for line shipment and f.o.b. Port Richmond for tide are as follows:

Line	Tide	Line	Tide
Broken.....	\$5.90 \$6.05	Buck.....	\$3.15 \$3.75
Egg.....	4.80 6.00	Rice.....	2.65 3.65
Stove.....	5.05 6.35	Boiler.....	2.45 3.55
Nut.....	5.15 6.40	Barley.....	2.15 2.40
Pea.....	3.75 4.65		

Bituminous—There is no abatement in the soft coal famine. Despite much bitter criticism to the contrary it cannot be denied that the suspension order has at least done some good in providing coal for some vital needs. This began to show itself on the first Monday holiday when the railroads brought into the city 1100 cars of bunker coal, all of which was promptly delivered to the waiting ships, and good quantities have been received daily for the same purpose.

It has been a most active week for the operators, with a continuous succession of meetings. Anticipating the zoning order of the national administration the local shippers got together and in conference with Administrator Garfield appointed a committee of four from their number to be in touch with the state fuel authorities at all times. This committee has taken office room near Chairman Potter and some one

of the committee will be on hand at all hours. If there is any criticism of the zoning system it is only on the score of consumers being accustomed to certain grades of coal, which must of necessity be eliminated under the present plan.

The operators of the central Pennsylvania district with offices in this city have passed a resolution asking the U. S. Senate to amend the Lever food law insofar as it relates to the production and distribution of coal. In this resolution they ask that the present national fuel administration be superseded by a committee of 15 men, to consist of 9 coal men, two from the railroads, two from the Government and two citizens. The resolution has already been forwarded to Senator Knox of this state, asking that he introduce a bill covering this point.

The need of fuel has become so critical that the matter of a new price seems almost to have been overlooked, but notwithstanding this the producers have no doubt that eventually they will be granted relief in this respect. They point to the anthracite trade, where from the beginning a satisfactory price has been allowed the operators and as a result production has been greatly stimulated.

While many consumers seek to secure contract protection, even to making propositions which are simply out of the question, there is practically no activity in this line, except possibly in the case of certain public utilities, a few of which occasionally state they are being protected on fair quantities at the Government price. These instances, however, are usually where former contracts have expired and simply resolve themselves into the question of the old shippers continuing a supply to the best of their ability.

A careful review of the entire situation must bring one to the conclusion that the fuel needs of this district are still in a critical state and at this time it would appear that further suspensions are but a short time off. While there continues to be much harsh criticism of the national fuel administration there is a growing tendency to consider the difficulties which daily arise to hamper each new move.

BALTIMORE

Blizzard-like conditions here have tied up traffic. Thousands of homes without coal, and many industries run on shortened time. Hard coal prices advanced.

Bituminous—This section, blizzard swept at a time when it was hoped that fuel movement was to improve, has been caught desperately short of coal of all character. Hundreds of industries, large and small, are running on a day-to-day supply, and many have been forced to curtail production.

On best days recently the unloadings for strictly local consumption have run only about an average of 50 cars of soft coal a day, whereas the normal consumption, when normal winter stocks are on hand, is around 125 cars a day. The snowstorm cut the unloadings here at the outset of the week to less than 25 cars a day. Mining districts report the arrival of empties as being far below their capacity to load. Serious congestion is reported at all coal junction points. Several hundred cars of soft coal have been diverted the past week at Hagerstown and Brunswick by the American Railway Association Special Committee of National Defense, from commercial consignment to the account of Fuel Administrator here for domestic and public utilities use. Many of these diverted cars have failed to get through to terminals here, however.

Anthracite—The situation here is so desperate that hundreds of householders have turned to the use of bituminous, where that coal could be secured. The hard coal unloadings here are reported around 10 to 25 cars a day, whereas the normal receipts in normal winter times is around 100 cars a day. The straits of the consuming public here are shown in a report of a census made by the lighting company through meter inspectors. This shows in 10/20ths of the city blocked off that there were up to January 22 a total of 9685 homes without coal of any kind. This was a 50 per cent. increase over December figures, and it is estimated that there are now fully 15,000 families in Baltimore without coal in their cellars.

Stating that the reclassifying by Washington as independents some of the important mining supply concerns that formerly sold on low price schedule required a rearrangement of hard coal prices at retail here, Fuel Administrator Meyer has announced the following new schedule of rates, which are a 75 cent advance over the old prices allowed the trade:

Hard White Ash—No. 1, broken, \$10.40; No. 2, egg, \$10.10; No. 3, stove, \$10.35; No. 4, chestnut, \$10.50; pea coal, \$8.85; buckwheat, \$8.10.

Sunbury—No. 2, egg, \$10.35; No. 3, stove, \$10.60; No. 4, chestnut, \$10.75.
Lykens Valley—No. 2, egg, \$10.85; No. 3, stove, \$11.10; No. 4, chestnut, \$11.10.

Lake Markets

PITTSBURGH

Situation somewhat improved. Better weather the chief reliance. Monongahela River frozen, but probably will be opened.

The local fuel situation has improved materially in the past week. The plant-closing order helped some, by reducing the consumption of coal, while the railroads have operated somewhat better, especially in the past two or three days. A 17-ft. crest of water is coming down the Monongahela River and steamboats will embrace the opportunity to break ice in the lower pools, with prospects they can open the first three pools. As soon as the crest is past, coal will follow, and by the end of the week a good supply of river coal is expected for Pittsburgh, enabling several plants that have been idle over three weeks to resume.

Coal shippers attach much more importance to the weather as a factor in coal supply than to the artificial means being used to combat the elements. It is believed that with anything like moderate weather the railroads will be able to operate and plenty of coal will be shipped. Car supplies at the mines late last week and at the beginning of this week were the best for two or three weeks, but that is saying little. Unless there is a fresh cold snap, however, the empties are expected to get through in larger numbers day by day.

Pittsburgh is not among the six of the 20 coal districts for which at this writing district representatives of the Fuel Administration have been appointed. Under the zoning system cross hauls are to be eliminated and coal is to be moved by the most direct routes from point of production to point of consumption. Byproduct coal, it is understood will be excluded from the system. Locally it is regarded as high time that the system should be put into operation, not only for what it is aimed to accomplish, but by reason of some practices that have grown up that will presumably be eliminated. It is claimed that under the old system some diversions of coal have been ordered that were not entirely warranted under the circumstances, the need of coal by the consumer in whose interest the diversion was ordered being clear, but the need of the original owner being perhaps equally pressing, although by chance not emphasized to the authorities.

A great deal of coal is changing hands at the set prices, by reason of requests of the authorities, but of coal purchases in the open market, without any influence being exerted by the authorities, there have been very few. The market remains quotable at the set prices: Slack, \$2.20; mine-run, \$2.45; screened, \$2.70, per net ton at mine, Pittsburgh district, with 15c. permissible to be added in the case of sales by brokers.

TORONTO

Transportation conditions improved. Shipments of coal coming forward freely. Dealers delivering only small lots. Some suffering in suburban localities.

Conditions as regards the supply of coal show improvement, as notwithstanding unfavorable weather, shipments have been coming in with comparatively little delay. Local deliveries continue to vary from day to day, dealers being overwhelmed with orders and generally limiting deliveries to small lots. Centrally located consumers have little difficulty in obtaining supplies for immediate requirements, but numerous cases of hardship in the outlying districts, where the streets are in bad condition, are reported. There is no change in prices.

Quotations for best grades per short ton are as follows: Retail anthracite: Egg, stove, nut and grate, \$9.85; pea, \$8.85; bituminous steam, \$9; slack, \$8 to \$8.50; domestic lump, \$10; cannel, \$9. Wholesale, f.o.b. cars at destination, three-quarter lump, \$7 to \$7.50; slack, \$6.85 to \$7.

BUFFALO

Slight improvement in bituminous. Cars badly bunched by priority orders. Permanent relief not before warm weather. Few plants shut down as yet, many near closing. Anthracite in better supply, but consumption much increased.

Bituminous—The situation is a trifle improved and there is promise of a better supply of coal hereafter, but it is by no means a certainty for the priority orders, which sent more coal to certain points than could be handled has made that side of the situation about as bad as possible. Shippers now say that there is coal enough

mined to meet the requirements, but the car supply has been wasted and it will be some time before that can be straightened out.

Complaint of the management of bituminous continues. Shippers say that the new zone system of handling will work, for coal men are to head it, but the cars have been so tied up that it will take some time to get them to moving as they should. Reports of cars bunched at various points with no motive power in sight are common. Jobbers say the zone system will put them out of business.

The fire insurance agents have begun to take alarm at the prospect or possibility of loss from plants shutting down and are threatening cancellations.

Government prices of bituminous are not common, but they are becoming more so steadily and will be the regular prices soon. There are at the same time reports of coal sold at extra prices here and there. Quotations, per net ton, f.o.b. Buffalo are as follows:

	Slack	Lump
Pittsburgh.....	\$3.75	\$4.25
Bessemer.....	3.70	4.20
Allegheny Valley.....	3.60	4.10

Anthracite—The local supply has increased considerably of late, but if it had not the distress would have been great. As it is the distribution cannot be made to meet the needs exactly. Hundreds of emergency cases sometimes develop in a day, which have to be met by investigation and the giving out of coal by the single ton to save it from too early exhaustion. Some of the retailers are said to disfavor one-ton business and try to make it appear that they are too busy to bother with it.

Anthracite shippers agree that there will be no real relief till spring and they do not look for it to take place then, though the suffering for want of fuel ought to disappear soon thereafter. It is the weather that makes it so hard to keep the consumers supplied and the trade has to reflect that ordinarily all of our coldest weather usually comes after this time of the year.

The snow is deep especially on side streets and the deliveries of single tons have to be made in a deep bank, to be dug out and carried to the cellar by a slow and laborious process.

DETROIT

Coal scarcity daily becomes more acute. Scores of factories in Detroit and throughout state close; tie-up of others threatens.

Bituminous—New transportation tangles produced by the snowstorm and low temperatures of Jan. 26-7 dropped another monkey wrench into the mechanism of the fuel administration's system of coal supply for Detroit, which had been seriously disarranged previously by heavy snowfall and zero weather in the three weeks preceding. Throughout the city and state, hundreds of manufacturing plants are being forced to close through lack of coal, while scores of others are facing the necessity of following that course. Among the latter is the gigantic Morgan & Wright plant of the United States Rubber company in Detroit, which is working on Government contracts.

Closing of the public schools of Detroit to permit distribution of their coal supply among suffering domestic consumers is being urged but is temporarily deferred. More than 3000 applications from domestic coal users are on file in the Detroit police department, which is administering the local distribution, in connection with the Detroit Terminal pool organized by shippers and jobbers.

Anthracite—Reports given by railroad committees indicate Detroit received something like 25 cars of anthracite during the week ending Jan. 26. Few of the retail yards have any in stock and the continued transportation troubles due to weather conditions render arrival of additional supplies uncertain. Little or no coke is to be had. Many domestic consumers having heating plants designed to use only hard coal, are struggling to use soft coal, when they can get it. With the two months usually productive of the severest winter weather yet to come, the outlook is causing great apprehension among coal dealers as well as consumers.

COLUMBUS

There is still a marked shortage of fuel in central Ohio and strenuous efforts are being made to avert suffering. Domestic consumers are now being served first. The county and state fuel administrations have been busy confiscating coal for domestic use.

The coal situation in Columbus and central Ohio territory during the past week has been the worst in several months. Owing to zero weather which stopped rail-

road traffic to a large extent receipts of coal were kept at a minimum and fuel administrations have been having their hands full in distributing the available supply. Domestic users have been given the preference and what was left over was permitted to be used by public utilities and commercial consumers. On the whole the situation has been extremely bad although instances of actual suffering were kept at a minimum.

Steam users have been hard hit during the past week. Owing to restrictions of the fuel administration, many plants have been compelled to suspend operations entirely. The public service concerns have been giving only partial service because of short fuel supplies. Hospitals and charitable institutions have been provided for and the same is true of public buildings. But schools have been short and suspensions have been made necessary in many sections of the state.

Prices on short tons f.o.b. mines are as follows:

	Hock- ing	Pom- eroy	Eastern Ohio
Sized grades.....	\$2.70	\$3.05	\$2.70
Mine-run.....	2.45	2.70	2.45
Screenings.....	2.20	2.45	2.20

CINCINNATI

Moderating weather promises relief from the serious fuel situation, but so far it remains necessary to stint industrial consumers in order to supply domestic demand. Transportation conditions are still bad, congestion being unrelieved.

Although it is estimated that 10,000 tons of coal were saved on the first Monday "holiday," and probably four times that much by the five-day suspension of industrial operations, in and around Cincinnati, relief from the fuel famine which made widespread suffering imminent was not immediate, and has not yet been safely accomplished. While it was not expected that complete relief from the general congestion on railroad lines would result immediately from the suspension order, it was believed that the beneficial effects would be far greater and the improvement in both transportation conditions and in the fuel situation much more tangible than was the case.

As a matter of fact, while there has been some improvement, brought about by the concentration of all thought on the movement of coal, continued severe weather would have rendered this almost negligible. Much more moderate weather beginning on Wednesday of last week served to furnish the needed remedy, by reducing the emergency demand for coal, and by making it possible to expedite general freight movements, which had been badly hampered by heavy snow and by low temperatures.

LOUISVILLE

Moderating weather most hopeful influence in Kentucky coal market. Traffic failure ties up much coal on Kentucky tracks. Production less than 50 per cent. Retail market chaotic.

Several days of moderating temperature have brought much encouragement to the Kentucky coal trade, holding as they do promise of easing up of the traffic situation and, with an improved supply of gas, a let-up in the panicky demand of retail consumers. There are 3000 or more cars of coal between the mines in southeastern Kentucky and the Ohio river gateways some of which have been on track for two weeks or more.

Unable to move this coal the railroads have been unable to place empties and numbers of night crews have been laid off as much as three days at a time by the railroads. A 30 per cent. car supply was the week's record, while one operator's estimate of total production was that it would not equal 50 per cent. of normal. Some of the mine operators have had to contend with plant breakdowns at the mines, while derailments and wrecks of coal trains have from time to time further slowed things up. In many parts of the state operators have had to take their miners to the surface and set them to shoveling snow off roofs to prevent collapses and to clearing the yards and terminals.

The retail trade throughout Kentucky is still in a chaotic state. Consumers hang on the telephone and dealers must have extra clerks to answer them, while all have many orders on their books with local fuel administration assignments to deliver coal piled up on top of them. Here and there the situation has been further disorganized by the well-meant though mischievous efforts of amateur coal traffic regulators to find solutions. Meanwhile the coal trade is pegging away, patiently where possible, overtime in most cases, doing what it can to keep production and distribution alive.

BIRMINGHAM

Local situation much improved by warmer weather and more liberal receipts. Production also bettered by more favorable weather conditions, though there is still an acute shortage in both domestic and steam grades.

The stress in the domestic situation locally and throughout the state has been greatly relieved by several days of warmer weather, and increased shipments, and although there is still an acute shortage, all urgent appeals have been met, and in a few instances local yards have been able to get a car or two ahead. Considerable tonnage was commandeered at different points in the state for both domestic and steam use, but only about 20 cars were taken over by the local fuel board. The distribution of coal donated by operators continued this week and the poorer classes were afforded relief in this manner. The steam situation remains unchanged—the demand being far in excess of the available supply, essential industries and utility companies receiving some benefit from the closing down of non-essential operations for the five-day period.

Good results are expected to be attained in the distribution of Government requirements and federal priority orders among the mines under the direction of E. A. Holmes, district representative of the fuel administration, recently named for the Alabama field, as it will undoubtedly avoid much confusion and disturbance in the normal movement of coal from the mines of the district.

The proposed zoning of the distribution territory of each field is also looked upon with favor by operators provided boundaries are established in line with the territory normally supplied from this district.

Coke

CONNELLSVILLE

Cross movements largely eliminated. Car supplies beginning to improve. Blast furnace operations very light.

Cross movements of coke are being rapidly eliminated, practically all interests being now willing to make what exchanges the conditions dictate. The exchanges now in operation involve a few tens of thousands of tons a week. Practically all the coke that reaches the main line of the Pennsylvania through Latrobe and Greensburg is now going east.

Car supplies in the coke region improved slightly late last week and expectations are that this week's supplies will be much better. There has been practically no improvement in supplies to blast furnaces, as the furnaces in the past few days have been feeling the effects of the light shipments previously made. There is nothing like quick movement as yet, and any increase in shipments this week would scarcely be felt by the furnaces even next week. While the amount of coke en route between ovens and furnaces has materially decreased in the past two or three weeks, shippers attribute the decrease more to the lightness of shipments than to the railroads being in better working order.

The plant-closing order has not directly affected blast furnace operations, as the blast furnaces are exempted on the ground of their representing seven-day work. Blast furnace activity in the Central West is now averaging between 60 and 70 per cent. of capacity.

There is no open market for coke as the limited shipments are all taken up by contract requirements. The market is nominally quotable at the set prices: Furnace coke, \$6; 72-hr. selected foundry, \$7; crushed, over 1-in., \$7.30, per net ton at ovens.

The "Courier" reports production in the Connelleville and lower Connelleville region in the week ended Jan. 29 at 238,425 tons, an increase of 718 tons, and shipments at 247,487 tons, a decrease of 43,231 tons.

Buffalo—The situation continues quiet, with operations not badly hampered by the general fuel situation. Coke is by no means easy to get, but the supply has not been reduced as in the case of bituminous coal, for both production and consumption are in few hands and the relations are easily made. It is believed that the supply will continue at least fairly good and that as much iron will be turned out in future as is the case with other necessary manufactures. No popular price for commercial coke has been adopted, at least if the Government regulation prices have prevailed anywhere the fact has not been made public. A good many of the manufacturers of byproduct

coke are selling the smallest size, called breeze, at about \$2.75 net at the ovens. It is eagerly taken by all sorts of consumers of fuel. Much more of it could be sold if it were to be had.

Middle Western

GENERAL REVIEW

Continued zero weather throughout the Middle West puts railroads almost out of commission. Coal production limited.

Continued cold weather has almost put the railroads out of commission, resulting in their supplying the coal mines throughout this section with 25 to 40 per cent. enough equipment to load their potential capacity.

Franklin County, the largest producing county in the State of Illinois, produced 180,000 tons less from Jan. 2 to 22 inclusive, than for the same period in 1917.

In Saline County output was reduced from 160,000 tons in 1917, to 34,000 tons for the same period in 1918.

Williamson County, the second county in the state in production, has had less than 40 per cent. car supply.

In various sections of the state mine operation is seriously handicapped for the need of water, and the mines are compelled to depend on the crippled railroads to switch water cars from some near-by supply to the mines. In many instances this service has been so delayed that the mine was either compelled to close or wait indefinitely on delayed switch engines to perform the service.

Dr. Garfield's closing order has been strictly observed throughout this territory, but not without some complaints. These complaints usually arose in those cases where the persons or firms affected had made provision for their fuel supply, and could have continued operation with what they had on hand.

The past week has as yet had no equal as far as demand is concerned. In every section of the country the cry for coal by the dealers and steam users continues to reach the operators. Most of the available supply is being handled through local and state fuel administrators. In most cases where it was evident there was actual suffering coal has been supplied, because of state fuel administrators' orders that homes must be protected with heat at the earliest possible moment, and regardless temporarily of the needs of manufacturing industries. During the week past there has been in effect an order that compelled the producer to ship 10 per cent. of his production to the state fuel administrator at some reconsigning point. This it was calculated would give a sufficient amount to relieve any urgent needs. However, the railroad break-down did not create the tonnage contemplated.

This order was rescinded late in the week, and a committee of association secretaries together with the president of the Coal Operators Association of Illinois, looked after, and worked with the state fuel administrators' orders on those cases that required immediate attention.

The appointment of J. D. A. Marrow, present secretary of the National Coal Association, as General Manager of Distribution, by Dr. Garfield has the hearty approval of coalmen throughout the Mid West. Many of the active operators firmly are convinced that with the coöperation of state and local coal association secretaries the question of distribution can and will be handled in a more satisfactory manner than by state and local fuel administrators. It is planned to organize a central bureau under the general direction of which all subsequent Illinois-Indiana and possibly Southwestern coal will be distributed.

CHICAGO

Chicago is still in the grip of the Weather Man, with no relief in sight.

Regardless of the action of the city fuel administrator in pooling, and confiscating all the coal in sight, Chicago is at this time in the grip of the most far-reaching fuel shortages ever experienced. When it

	Williamson and Franklin	Saline and Harrisburg	Fulton and Peoria	Springfield	Carterville	Grundy, LaSalle, Bureau and Will
Prepared sizes.....	\$2.65@2.80	\$2.65@2.80	\$3.00@3.15	\$2.65@2.80	\$2.65@2.80	\$3.35@3.50
Mine-run.....	2.40@2.55	2.40@2.55	2.75@2.90	2.40@2.55	2.40@2.55	3.10@3.25
Screenings and washed slack.....	2.15@2.30	2.15@2.30	2.50@2.65	2.15@2.30	2.15@2.30	2.85@3.00
	Clinton and Sullivan	Knox and Greene	Eastern Kentucky	Pocah. and W. Va.	Penna.	Hocking
Prepared sizes.....	\$2.65@2.80	\$2.65@2.80	\$3.10@3.25	\$2.60@2.75	\$2.60@2.75	\$3.05@3.20
Mine-run.....	2.40@2.55	2.40@2.65	2.85@3.00	2.45@2.60	2.45@2.60	2.70@2.85
Screenings.....	2.15@2.30	2.15@2.30	2.60@2.75	2.10@2.25	2.10@2.25	2.55@2.70

is considered that with schools, both public and parochial, closed, hundreds of manufacturing plants observing Mondays as holidays, and not enough coal arriving each day to relieve urgent and distressing needs, we may understand how desperate the situation is.

There can be no relief until the railroads provide more cars and are able to get them moved to the customers. And railroad relief will be forthcoming when the present cold spell abates. City Fuel Administrator Durham is limiting deliveries to half tons, with the hope that production in some way will be stimulated, and more coal brought into this market at an early date so as to keep suffering down to a minimum.

In the meantime parent and civic organizations, are clamoring that schools be allowed to open, and that saloons be closed instead.

Quotations in the Chicago market are as shown in the table at the foot of the page per net ton f.o.b. cars at mines.

MILWAUKEE

Shipments of coal to interior points show an improvement. Rail receipts slow, owing to weather conditions. Illinois forbidden to confiscate Wisconsin-bound coal.

While snow-buried streets are seriously hindering coal deliveries in Milwaukee, the closing of factories for several days gave the railroads an opportunity to move fuel trains into the country, and the shipping record of the past week was about normal. Receipts of coal are considerably less than usual, however, owing to storm conditions. January receipts average 50,000 tons. Last January 160,000 tons were received, but this was unusual, as it included heavy consignments for the use of the railroads.

Fuel Administrator Fitzgerald has arranged to supply plants in the interior which are out of fuel with coal from Milwaukee, Superior and Sheboygan. More than 60 cars went out to such points on the 24th.

Cars loaded at Illinois and Indiana points for Wisconsin yards, factories and public utilities were confiscated while in transit by the fuel administrator of Illinois. This brought a protest from Mr. Fitzgerald, with the result that orders were issued from Washington forbidding a repetition of the practice.

Milwaukee has weathered the coal crisis and the outlook is that with the practice of reasonable economy no home or factory will suffer because of a lack of fuel. The delivery situation is strenuous, however. Four horses are necessary for a full-sized load and high-powered trucks make slow progress through the snow. The cost of delivery is eating up the profits of dealers and in many cases leads to loss. In one instance it cost \$40 to deliver five tons of coal to a private sanitarium in the outskirts of the city, all of which fell upon the dealer.

Owing to complaints that coal dealers are exceeding the prices allowed by government regulations, the city of West Allis has inaugurated an investigation with the intention of making prosecutions.

ST. LOUIS

The St. Louis situation much easier. Weather moderated and enough coal coming in to take care of current needs. Railroad situation still extremely bad and mines idle for several days straight. Country districts in distress with promise of prompt relief. Steam needs in fair shape. No outside coal coming in.

The past week has been perhaps the most strenuous in the history of the St. Louis coal trade, but relief came about the middle of the week through the conservation methods employed and because of the system of distribution at work.

The railroad condition is in a deplorable shape. There does not seem to be any system at all in the St. Louis terminals for the regulation of traffic and it just happens along as it will and the contingencies permit.

The Illinois Central is still plugging along without anything definite in sight as to ability to take care of obligations. It is a

case of perhaps we will and maybe we won't.

The eastern part of the State of Arkansas has been out of fuel and all efforts on the part of the fuel administrator for relief have brought but little relief from the Illinois field. That section of Louisiana depending upon Illinois is in the same condition, without coal. Southeast Missouri, however, suffers more than any other section. Between the roads from Williamson and Franklin County that lead into south-east Missouri confiscating coal and the other roads from the other fields placing embargoes against that gateway, a condition has been brought about that is shameful when one considers that the country as a whole should bear the burden and that one section should not be deprived of necessary fuel to cater to the white-way life of another.

For one week Missouri was a lightless state. Practically everything closed at 7 o'clock. Administrator Crossley lifted this for the coming week on certain lines until 11 o'clock, but four-fifths of all business for the present week closes at 7 p. m., excepting factories working on Government orders.

Throughout the State, while there are sections that are without coal, these are being taken care of promptly during the present week and the coal is distributed so that while there is no surplus anywhere it is the aim not to have any suffering in any section.

In Williamson and Franklin County the conditions are not good. The railroad tonnage seems to be getting greater and such available domestic coal as is produced goes to the northern markets, while the natural markets of the past, west of the river, are getting practically nothing. There are no rates to many of these points from any other regions than the Carterville field, and coal can't be shipped there.

In the Du Quoin field conditions are about the same. Mt. Olive is not much different. The railroads seem to be getting the bulk of this coal, although more of this tonnage is coming into St. Louis than coal from the Carterville or Du Quoin field.

In the Standard field the mines have had extremely poor working time. Some mines worked only two days this past week and since the snow storm some mines have gone for ten days straight without working. It is estimated that about a quarter million tons of coal from the southern Illinois fields have been lost through railroad inefficiency in the course of two weeks time.

The Terminal condition at St. Louis is not good. Cars have been hanging around the Terminals for upwards of three and four weeks and are still undelivered. The railroads still continue to confiscate coal and are not making prompt reports to either consignees or shippers.

The conference in Kansas City this week between the administrators of Iowa, Nebraska, Missouri, Kansas, Oklahoma and Arkansas brought forth the fact that all of these States were opposed to the zoning of the southern Illinois field unless the zone comprising the above States included certain producing zones in the southern Illinois region.

They did, however, go on record as being opposed to the zoning of the country west of the Indiana state line, showing they had no confidence in the zone system as proposed by the Illinois operators excepting those in the 5th and 9th districts.

They further recommended that the Fuel Administrator arrange for a reduction of 75c. a ton on April 1 from all fields, this to increase 15c. a month to assure the early storage of coal.

The local situation is easy. Small consumers are being taken care of and steam plants have normal requirements.

The prevailing market is as follows per net ton f. o. b. mine:—

	Williamson and Franklin County	Mt. Olive and Staunton	Standard
6-in. lump...	\$2.65@2.80	\$2.65@2.80	\$2.65@2.80
3x6-in. egg.	2.65@2.80	2.65@2.80	2.65@2.80
2x3-in. nut.	2.65@2.80	2.65@2.80	2.65@2.80
No. 2 nut.	2.65@2.80		
No. 3 nut.	2.65@2.80		
No. 4 nut.	2.65@2.80		
No. 5 nut.	2.15@2.30		
2-in. scrags...	2.15@2.30	2.15@2.30	2.15@2.30
2-in. lump.			2.65@2.80
3-in. lump.		2.65@2.80	
Steam egg.	2.65@2.80	2.65@2.80	2.65@2.80
Mine-run.	2.40@2.55	2.40@2.55	2.40@2.55
Washed:			
No. 1.....	\$2.65@2.80	\$2.65@2.80	
No. 2.....	2.65@2.80	2.65@2.80	
No. 3.....	2.65@2.80	2.65@2.80	
No. 4.....	2.65@2.80	2.65@2.80	
No. 5.....	2.15@2.30	2.15@2.30	

Williamson & Franklin Co. rate is 87½c. Other fields, 72½c.

CURRENT PRICES—MATERIALS & SUPPLIES

IRON AND STEEL

PIG IRON—Below are the present quotations, with a comparison of a month and a year ago:

CINCINNATI	Jan. 30, 1918	One Month Ago	One Year Ago
No. 2 Southern foundry....	\$35.90	\$35.90	\$18.90
No. 2 Northern foundry....	35.90	35.90	21.76
NEW YORK			
No. 2X Northern foundry..	34.25	34.25	22.00
No. 2 plain Northern foundry	33.75	33.75	21.00
No. 2 Southern foundry....	37.25	37.25	22.00
BIRMINGHAM			
No. 2 Southern foundry....	33.00	33.00	16.00
CHICAGO			
No. 2 Northern foundry....	33.00	33.00	22.00
No. 2 Southern foundry....	37.00	37.00	....
PITTSBURGH			
Bessemer iron*	37.25	37.25	24.95
Basic iron*	33.95	33.95	20.95

*These prices include the freight charge from the valley to the Pittsburgh district. †Delivered Tidewater, New York.

Note—On Sept. 24 the President approved the new schedule of steel prices, that of pig iron being set at \$33.

STRUCTURAL MATERIAL—The following are the base prices, f.o.b. mill, Pittsburgh, together with the quotations per 100 lb. from warehouses at the places named:

	Mill, Pittsburgh	New York, Jan. 30, 1918	1 Year Ago	St. Louis	Chicago
Beams, 3 to 15 in.	\$3.00	\$4.195	\$3.25	\$4.27	\$4.20
Channels, 3 to 15 in.	3.00	4.195	3.25	4.27	4.20
Angles, 3 to 6 in., 1/4 in. thick	3.00	4.195	3.25	4.27	4.20
Tees, 3 in. and larger	3.05	4.245	3.40	4.27	4.25
Plates	3.225	4.45	4.00	4.52	4.45

BAR IRON—Prices in cents per pound at cities named are as follows:

	Pittsburgh	St. Louis	Denver	Birmingham
Dec. 31, 1917	3.50	4.45	4.05	4.50

NAILS—Prices per keg from warehouse in cities named:

	Mill, Pittsburgh	St. Louis	Denver	Chicago	San Francisco	Dallas
Wire	\$3.50	\$4.30	\$4.85	\$4.25	\$4.60	\$4.50
Cut	4.00	5.25	....	4.40	6.15	....

TRACK SUPPLIES—The following prices are base per 100 lb. f.o.b. Pittsburgh for carload lots, together with the warehouse prices at the places named:

	Jan. 30, 1918	One Year Ago	Cincinnati	Chicago	St. Louis	San Francisco	Birmingham	Denver
Standard railroad spikes 1/4-in. and larger	\$3.90	\$2.65	\$6.00	\$5.00	\$6.45	\$7.25	\$5.30	\$5.00
Track bolts	4.90	3.25	8.90	6.25	Premium	8.80	6.75	6.00
Standard section angle bars	3.25	2.00	....	4.50	Premium	4.65	....	....

COLD DRAWN STEEL SHAFTING—From warehouse to consumers requiring fair-sized lots, the following discounts hold:

	Cincinnati	Cleveland	Chicago	St. Louis	Denver	Birmingham
17 1/2 % List	+10 %	+10 %	+35 %	+20 %	....

HORSE AND MULE SHOES—Warehouse prices per 100 lb. in cities named:

	Mill, Pittsburgh	Cincinnati	Chicago	St. Louis	Denver	Birmingham
Straight	\$4.75	\$6.30	\$6.50	\$6.00	\$7.50	\$6.25
Assorted	4.90	6.30	6.50-7.00	6.25	7.75	6.50

CAST-IRON PIPE—The following are prices per net ton for carload lots:

	New York, Jan. 30, 1918	One Month Ago	One Year Ago	Chicago	St. Louis	San Francisco	Dallas
4 in.	\$58.35	\$58.35	\$44.50	\$57.30	\$57.00	\$66.40	\$61.00
6 in. and over	55.35	55.35	41.50	54.30	54.00	63.40	58.00

Gas pipe and 16-ft. lengths are \$1 per ton extra.

STEEL RAILS—The following quotations are per ton f.o.b. Pittsburgh and Chicago for carload or larger lots. For less than carload lots 50 per 100 lb. is charged extra:

	Pittsburgh, Jan. 30, 1918	One Month Ago	One Year Ago	Chicago, Jan. 30, 1918	One Month Ago	One Year Ago
Standard bessemer rails	\$65.00	....	\$38.00	....	....	\$38.00
Standard openhearth rails	67.-68.	....	40.00	....	....	40.00
Light rails, 8 to 10 lb. ....	....	....	52.00	....	....	47.00
Light rails, 12 to 14 lb. ....	....	....	52.00	....	....	46.00
Light rails, 25 to 45 lb.	67.00*	....	50.00	....	....	44.00

*Government price of \$3.00 per 100 lb. Note—Combria Steel Co. reported to be taking orders for standard sections.

OLD MATERIAL—Prices per net ton in Chicago and St. Louis (including delivery to buyer's works and freight transfer charges):

	Chicago, Jan. 30, 1918	One Month Ago	One Year Ago	St. Louis, Jan. 30, 1918	One Month Ago	One Year Ago
No. 1 railroad wrought	\$31.25	\$29.50	....	\$30.50	\$31.00	....
Stove plate	21.50	16.00	....	20.50	16.50	....
No. 1 machinery cast	26.00	20.00	....	26.00	21.50	....
Machine shop turnings	17.00	16.50	....	17.50	16.75	....
Cast borings	16.50	16.50	....	17.00	16.00	....
Railroad malleable cast	26.80	26.50	....	26.00	25.50	....

COAL BIT STEEL—Warehouse price per pound is as follows:

New York	Cincinnati	Birmingham	St. Louis	Denver
\$0.12	\$0.16 1/2	\$0.16	\$0.15	\$0.16

DRILL STEEL—Warehouse price per pound:

	New York	St. Louis
Solid	14c.	16c.
Hollow	24c.	25c.

PIPE—The following discounts are for carload lots f.o.b. Pittsburgh; basing card of Nov. 6, 1917, for steel pipe and for iron pipe:

Inches	Steel Black	Galvanized	Inches	Iron Black	Galvanized
1/8, 1/4 and 3/8 ..	44 %	17 %	3/4 to 1 1/2	33 %	17 %
1/2	48 %	33 1/2 %	....	....	....
3/4 to 3	51 %	37 1/2 %	....	....	....

	2	2 1/2 to 6	2	2 1/2 to 4	2 1/2 to 6
LAP WELD	44 %	31 1/2 %	26 %	28 %	15 %
BUTT WELD	47 %	34 1/2 %	28 %	28 %	15 %

BUTT WELD. EXTRA STRONG PLAIN ENDS

1/8, 1/4 and 3/8 ..	40 %	22 1/2 %	3/4 to 1 1/2	33 %	18 %
1/2	45 %	36 1/2 %	....	....	....
3/4 to 1 1/2	49 %	36 1/2 %	....	....	....

	2	2 1/2 to 4	2	2 1/2 to 4	2 1/2 to 6
LAP WELD. EXTRA STRONG PLAIN ENDS	42 %	30 1/2 %	27 %	27 %	14 %
BUTT WELD	45 %	33 1/2 %	29 %	29 %	17 %
4 1/2 to 6	44 %	32 1/2 %	28 %	28 %	16 %

From warehouses at the places named the following discounts hold for steel pipe:

	New York	Black-Chicago	St. Louis
3/4 to 3 in. butt welded	38 %	42.8 %	40.1 %
3 1/2 to 6 in. lap welded	18 %	38.8 %	36.1 %

	New York	Galvanized-Chicago	St. Louis
3/4 to 3 in. butt welded	22 %	27.8 %	25.1 %
3 1/2 to 6 in. butt welded	List	24.8 %	22.1 %

Malleable fittings, Class B and C, from New York stock sell at list price. Cast iron, standard sizes, 15 and 5 %.

SHOP SUPPLIES

NUTS—From warehouse at the places named, on fair-sized orders the following amount is deducted from list:

	New York, Jan. 30, 1918	One Year Ago	Cleveland, Jan. 30, 1918	One Year Ago	Chicago, Jan. 30, 1918	One Year Ago
Hot pressed square	\$1.00	\$0.50	\$1.40	\$2.60	\$1.05	\$3.00
Hot pressed hexagon	1.00	.50	1.20	2.60	.85	3.00
Cold punched square	1.00	.50	.75	3.00	1.00	2.50
Cold punched hexagon	1.00	.50	.75	3.00	1.00	3.00

Semifinished nuts sell at the following discounts from list price:

	Dec. 31, 1917	One Year Ago
New York	40 %	50 %
Cleveland	60 %	50-10 %
Chicago	50 %	50-10 %
St. Louis	50-10 %	....

MACHINE BOLTS—Warehouse discounts in the following cities:

	New York	Cleveland	Chicago	St. Louis
3/4 by 4 in. and smaller	30 %	50 %	40-10 %	40 %
Larger and longer up to 1 in. by 30 in.	15 %	40 %	30-5 %	30-5 %

WASHERS—From warehouses at the places named the following amount is deducted from list price:

For wrought-iron washers:

New York	\$1.00	Cleveland	\$2.00	Chicago	\$3.00	St. Louis	\$3.00
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For cast-iron washers the base price per 100 lb. is as follows:

New York	\$5.00	Cleveland	\$4.50	Chicago	\$3.50	St. Louis	\$2.75
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RIVETS—The following quotations are allowed for fair-sized orders from warehouse:

	New York	Cleveland	Chicago
Steel 7/8 and smaller	30 %	35 %	40 %*
Tinned	30 %	35 %	40 %*

*For less than keg lots the discount is 35 %.

Button heads, 1/4, 1/2, 1 in. diameter by 2 in. to 5 in., sell as follows per 100 lb.:

New York	\$7.00	Cleveland	\$5.85	Chicago	\$5.50
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Coneheads, same sizes:

New York	\$7.10	Cleveland	\$5.95	Chicago	\$5.60
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MISCELLANEOUS

GREASES—Prices are as follows in the following cities in cents per pound for barrel lots:

	Cincinnati	Chicago	St. Louis	Birmingham	Denver
Cup	7	5 1/2	6.1	8 1/2	10
Fiber or sponge	8	6	6.4	15	15
Transmission	7	6	6.4	10	15
Axle	4 1/2	4	3.3	3	5
Gear	4 1/2	4 1/2	6.5	5 1/2	5 1/2
Car journal	22 (gal.)	3 1/2	4.6	5	5

BABBITT METAL—Warehouse prices in cents per pound:

	New York		Cleveland		Chicago	
	Jan. 30, 1918	Year Ago	Jan. 30, 1918	Year Ago	Jan. 30, 1918	Year Ago
Best grade	70.00	60.00	93.00	51.35	70.00	50.00
Commercial	40.00	30.00	21.50	18.50	25.00 to 30.00	20.00

HOSE—Following are prices of various classes of hose:

	Fire		Air	
	First Grade	Second Grade	First Grade	Second Grade
Underwriters' 2 1/2-in.	75c. per ft.			
Common, 2 1/2-in.	40%			
1/2-in. per ft.	\$0.55	\$0.30		
Steam—Discounts from list				
First grade... 30% Second grade... 30-5% Third grade... 40-10%				

LEATHER BELTING—Present discounts from list in cities named:

	Medium Grade	Heavy Grade
St. Louis	45%	40%
Denver	40%	40%
Birmingham	35%	40%
Chicago	30-10%	40-5%
Cincinnati	40-10%	40%

RAWHIDE LACING—40% off list.**PACKING**—Prices per pound:

Rubber and duck for low-pressure steam.....	\$0.77
Asbestos for high-pressure steam.....	1.54
Duck and rubber for piston packing.....	.88
Flax, regular.....	.66
Flax, waterproofed.....	.99
Compressed asbestos sheet.....	.99
Wire insertion asbestos sheet.....	1.21
Rubber sheet.....	.55
Rubber sheet, wire insertion.....	.88
Rubber sheet, duck insertion.....	.44
Rubber sheet, cloth insertion.....	.25
Asbestos packing twisted or braided, and graphited, for valve stems and stuffing boxes.....	1.10
Asbestos wick, 1/2- and 1-lb. balls.....	.65 to .70

WIRE ROPE—Discounts from list price on regular grades of bright and galvanized are as follows:

	New York	St. Louis
Galvanized iron rigging.....	List + 20%	+ 20%
Galvanized cast steel rigging.....	Net List	List
Bright plain rigging.....	30%	30%
Bright cast steel.....	17 1/2%	17 1/2%
Bright iron and iron tiller.....	5%	5%

MANILA ROPE—For rope smaller than 1/2-in. the price is 1/2 to 2c. extra; while for quantities amounting to less than 600 ft. there is an extra charge of 1c. The number of feet per pound for the various sizes is as follows: 1/2-in., 8 ft.; 3/4-in., 6 ft.; 1-in., 4 1/2 ft.; 1 1/4-in., 3 1/2 ft.; 1 1/2-in., 2 ft. 10 in.; 1 3/4-in., 2 ft. 4 in. Following is the price per pound for 1/2-in. and larger, in 1200-ft. coils:

Boston	\$0.35 1/2	Kansas City	\$0.33 1/2
New York	.34	Los Angeles	.33 1/2
Chicago	.32 1/2	Seattle	.33 1/2
Denver	.33 1/2	St. Louis	.33
Birmingham	.37	Cincinnati	.33

PIPE AND BOILER COVERING—Below are discounts and part of standard lists:

PIPE COVERING		BLOCKS AND SHEETS	
Pipe Size	Standard List	Thickness	Price per Sq. Ft.
1-in.	\$0.27	1/2-in.	.30
2-in.	.36	1-in.	.45
6-in.	.80	1 1/2-in.	.60
4-in.	.60	2-in.	.75
3-in.	.45	3-in.	.90
10-in.	1.30	3 1/2-in.	1.05
85% magnesia high pressure.....			15% off
For low-pressure heating and return lines.....			58% off
			60% off
			62% off

LINSEED OIL—These prices are per gallon:

	New York		Cleveland		Chicago	
	Jan. 30, 1918	Year Ago	Jan. 30, 1918	Year Ago	Jan. 30, 1918	Year Ago
Raw per barrel.....	\$1.31	\$0.96	\$1.35	\$1.00	\$1.32	\$0.98
5-gal. cans.....	1.41	1.06	1.50	1.10	1.45	1.08

WHITE AND RED LEAD in 500-lb. lots sell as follows in cents per pound:

	Red		White	
	Jan. 5, 1918	1 Year Ago	Jan. 5, 1918	1 Yr. Ago
25- and 50-lb. kegs	11.50	11.00	10.50	11.00
12 1/2-lb. keg	11.75	11.25	10.75	11.25
100-lb. keg	11.25	11.50	11.00	11.50
1- to 5-lb. cans.....	13.25	13.00	12.50	13.00

CALCIUM CARBIDE—Price f.o.b. cars at warehouse points in Eastern States is \$102.50 per ton for Union miners' lamp carbide, and \$97.50 per ton for Cameo miners' lamp carbide. Union sells in 25-lb. cans for \$1.46 per can.

COMMON BRICK—The prices per 1000 in cargo or carload lots are as follows:

Cincinnati	\$13.56	Birmingham (clay)	\$8.00
St. Louis, salmon	8.06	Birmingham (shale)	9.00
Denver	8.50		

FUEL OIL—Price variable, depending upon stock. New York quotations not available owing to this fact. In Chicago and St. Louis the following prices are quoted:

	Chicago	St. Louis
Domestic light, 22-26 Baumé.....	5c.	5 1/2 c.
Mexican heavy, 12-14 Baumé.....	7c.	none

PREPARED ROOFINGS—Standard grade rubbered surface, complete with nails and cement, costs per square as follows in New York and Chicago:

	1-Ply		2-Ply		3-Ply	
	c.l.	c.l.	c.l.	l.c.l.	c.l.	l.c.l.
No. 1 grade.....	\$1.15	\$1.40	\$1.45	\$1.60	\$1.75	\$1.90
No. 2 grade.....	1.10	1.25	1.25	1.40	1.50	1.65
Asbestos asphalt-saturated felt (14 lb. per square) costs \$6.50 per 100 lb.						
Slate-surfaced roofing (red and green) in rolls of 108 sq. ft. costs \$1.85 per roll in carload lots and \$2.10 for smaller quantities.						
Shingles, red and green slate finish, cost \$4.75 per square in carloads, \$5 in smaller quantities, in Philadelphia.						

ROOFING MATERIALS—Prices per ton f.o.b. New York or Chicago:

	Carload Lots	Less Than Carload Lots
Tar felt (14 lb. per square of 100 sq. ft.).....	\$61.00	\$62.00
Tar pitch (in 400-lb. bbl.).....	15.00	16.50
Asphalt pitch (in barrels).....	29.00	30.50
Asphalt felt.....	60.00	62.00

STEEL SHEET PILING—The following price is base per 100 lb. f.o.b. Pittsburgh, with a comparison of a month and a year ago:

	Jan. 30, 1918	One Month Ago	One Year Ago
	\$4.50 to \$5.00	\$4.50 to \$5.00	\$2.60 to \$2.70

HOLLOW TILE—The price per 1000 in carload lots f.o.b. mine is as follows:

	4 x 12 x 12	8 x 12 x 12
St. Louis	\$79.00	\$135.00
Chicago	79.00	137.00
Denver, per ton	110.00	200.00
Kansas City	58.00	112.00
St. Paul	55.00	138.00
Boston	95.00	171.00
Birmingham	56.80	106.50
Cincinnati	68.80	129.00

LUMBER—Price of yellow pine per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft.	2-In. T. and G.	8 x 8 In. x 20 Ft.
	Y.P.	Fir	Hemlock
St. Louis	\$33.00	\$30.00	\$31.50
Denver	29.50	32.50	41.75
Birmingham	25.00	23.00	24.00
Cincinnati	35.00	37.50	35.00

Price per M in carload lots:

	1-In. Rough, 10 In. x 16 Ft.	2-In. T. and G.	8 x 8 In. x 20 Ft.
	Y.P.	Fir	Hemlock
Boston	\$45.00	...	\$50.00
Cincinnati	35.00	...	37.50
Kansas City	43.00	\$50.00	51.00
Seattle	27.00	27.00	27.00
New Orleans	36.00	...	28.00
St. Paul	...	53.00	61.00
Denver	...	30.00	30.00

	8 x 8-In. x 20 Ft. and Under				12 x 12-In. 20 Ft. and Under	
	Y.P.	Fir	Hemlock	Spruce	Y.P.	Fir
Boston	\$52.50	\$52.50	...	\$40.00	\$60.00	\$60.00
Cincinnati	35.00	...	...	...	35.50	...
Kansas City	42.00	34.00	...	...	48.00	35.00
Seattle	27.00	27.00	\$27.00	27.00	27.00	27.00
New Orleans	28.00	...	...	...	38.00	...
St. Paul	...	38.00	38.00	38.00	...	51.00
Denver	...	34.00	...	30.00	...	36.00

COPPER WIRE—Prices per 100 ft. for rubber-covered wire:

No.	Denver			St. Louis			Birmingham		
	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex	Single Braid	Double Braid	Duplex
14	\$10.90	\$15.15	\$27.25	\$11.30	\$13.37	\$26.08	\$15.00	\$17.90	\$36.80
10	23.70	27.05	49.35	23.16	26.34	...	29.00	34.30	67.60
8	33.60	37.35	74.45	32.32	35.96	...	39.90	46.85	...
6	...	57.15	...	...	62.92	...	58.95	74.60	...
4	...	81.70	...	...	88.20	...	97.20	106.55	...
2	...	121.80	...	...	127.38	...	154.50	163.00	...
1	...	158.50	...	...	167.80	...	197.45	209.50	...
0	...	189.40	...	...	192.00	...	276.00	285.50	...
00	...	298.05	...	...	245.78	...	317.00	330.00	...
000	...	362.15	...	...	300.00	...	414.40	428.00	...
0000	...	448.50	...	...	364.32	...	508.00	516.00	...

EXPLOSIVES—Price per pound in 200-lb. lots at cities named:

	Low Freezing		Gelatin		Black Powder*	
	20%	40%	60%	80%		
New York	...	\$0.27 1/2	\$0.34 1/2	...	\$2.50	...
Boston	...	...	36 1/4	\$0.43 3/4	...	...
Kansas City	\$0.20	26 1/4	33 1/4	43 1/4	...	...
Los Angeles	20	27	35	...	...	...
Seattle	18 1/4	24 1/4	31 3/4	41 1/4	...	...
Chicago	19 1/4	23 1/4	33	43	2.45	...
St. Paul	20	26 1/4	33 1/4	...	2.55	...
St. Louis	20	26 1/4	33 1/4	43 1/4	2.65	...
Denver	19	25 1/4	32 1/4	42 1/4	...	...
Dallas	25	29	39	49	...	...

*Keg.

FREIGHT RATES—On finished steel products in the Pittsburgh district, including plates, structural shapes, merchant steel, bars, pipe fittings, plain and galvanized wire nails, rivets, spikes, bolts, flat sheets (except planished), chains, etc., the following freight rates are effective in cents per 100 lb.:

Boston	21.5	Minneapolis	35.5
Buffalo	11.6	New Orleans	30.7
Chicago	21.5	New York	19.5
Cincinnati	18.5	Philadelphia	18.5
Cleveland	13.5	St. Louis	27.0
Denver	79.0	St. Paul	35.5
Kansas City	47.0	Pacific Coast (all rail)	90.0